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TUFTS HEALTH SCIENCES BOSTON CAMPUS

INSTITUTIONAL MASTER PLAN

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UNDER CHANGED

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1.1 Introduction

Tufts University is distinguished by its commitment to interdisciplinary eduction and research that addresses the problems and challenges of an increasingly complex world.

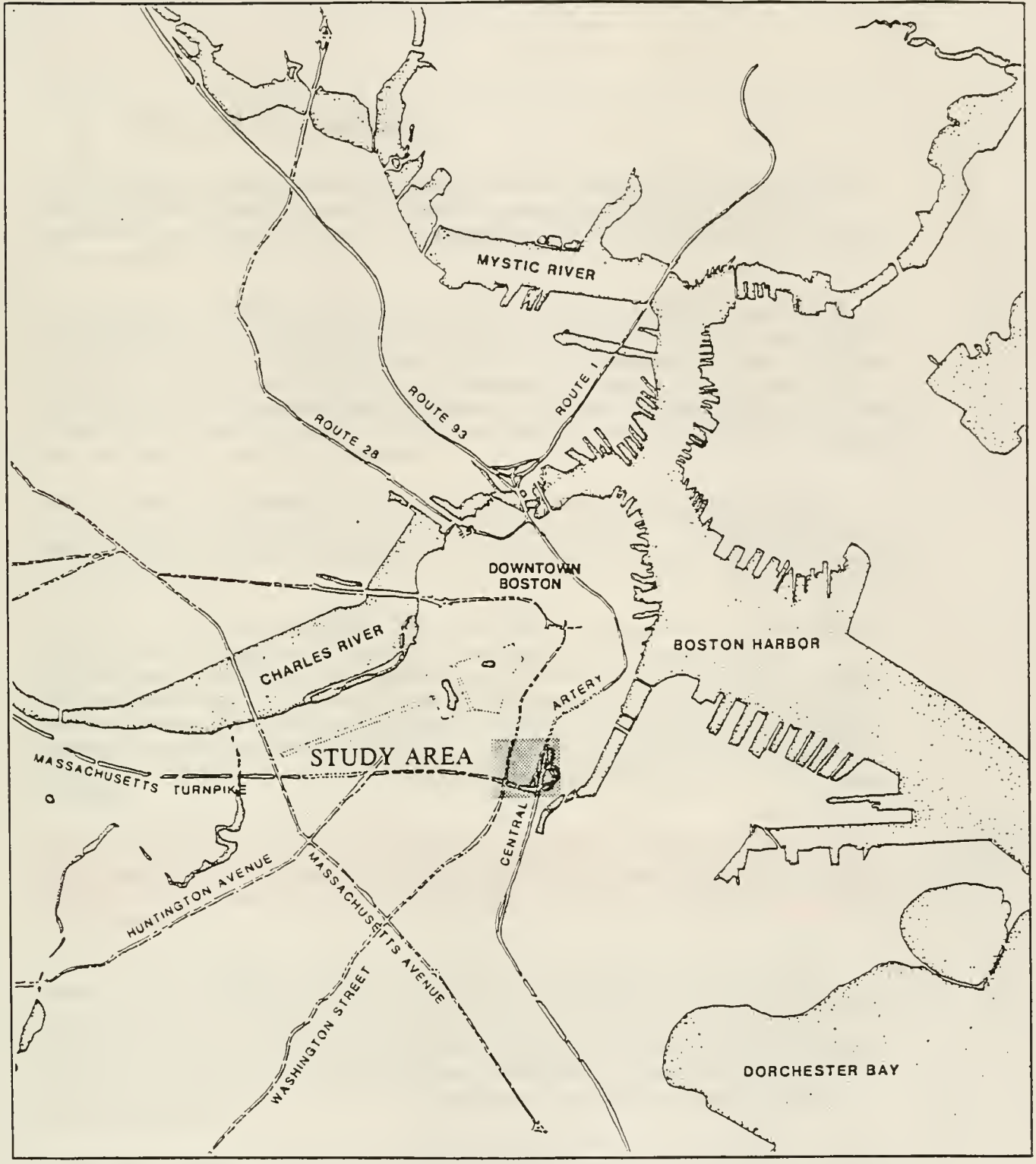
Education at Tufts begins with Liberal Arts, Science or Engineering undergraduate study and advances through graduate and professional schools in international relations, liberal arts, engineering and the health sciences. Faculty research is critical and thriving at all levels.

On Tufts' Medford/Somerville campus, 4500 undergraduates study in 44 departments in the liberal arts, sciences and engineering. In addition, over 1000 graduate students pursue graduate work in those areas as well as at the School of Nutrition and the Fletcher School of Law and Diplomacy.

Tufts' health science schools, on the Boston campus, in medicine, dental medicine, veterinary medicine and biomedical sciences are an integral part of the university. Approximately 1400 men and women pursue these studies on the Boston campus. Veterinary students, after basic sciences in Boston, continue their work on the Tufts' campus in Grafton, Massachusetts.

Each school and college at Tufts contributes to the philosophy of "making a difference." Whether interdisciplinary teams are developing new curricula or new life-saving drugs, whether faculty are investigating energy-saving windows or quality of life issues for senior citizens, whether students are learning about the world by studying abroad or are volunteering in the community, each is part of this institutional philosophy.

As Tufts has developed over the years, it has reflected, responded to and predicted societal needs. The University continues to be committed to being a leader in research, policy planning and in educating a corps of concerned citizens with the intellectual tools to make a difference. In order to accomplish these goals, the physical plant must be able to accommodate an ambitious and important research and teaching program. This Master Plan is an integral part of Tufts' plan for the next twenty years, and incorporates all of the space needs for the Boston campus for that period of time.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

STUDY AREA

Figure 1.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston. Massachusetts.

22 September 1991.

1.2 Executive Summary

Tufts University's Master Plan for its Health Sciences Campus in Boston positions the university over the next 20 years to expand its research and teaching, as well as to contribute as an integral partner to the economic growth of the City of Boston and of the Chinatown community.

After nearly 100 years of history in Boston, Tufts Health Sciences, and especially the Medical School, are limited in their potential only by their physical facilities and available resources. Tufts cannot expand its research activity without expanding research facilities. This plan presents the University's carefully thought out proposal for the next twenty years, taking into consideration that Chinatown/South Cove is a small land area with many demands upon it and that the uses of institutions and residential communities hard upon each other must be carefully coordinated.

This plan has been prepared after study and consideration of the university's health sciences needs as projected by its research departments, as well as careful study of all current and previous planning efforts and economic studies for the City of Boston and the South Cove/Chinatown.

Particular attention has been given to the 1990 Chinatown Community Plan and Boston Mayor Raymond Flynn's goals for the future of Boston, its economy and its neighborhoods. The Master Plan enhances the Chinatown community environs through design principles that improve street-level aesthetics and access for pedestrians, while opening new areas for retail business growth. Tufts' research and academic space are located at the commercially-zoned end of the Master Plan area, as far from the adjacent residential community as possible. Community uses are introduced as part of institutional buildings.

The Tufts Master Plan details how building 712,000 gsf of new research, teaching and support space through the plan's twenty year scope and beyond provides almost 600 new permanent jobs when completed, and about 2,000 construction jobs during its development.

712,000 includes Infill

The new research space in the Tufts Master Plan allows the university's School of Medicine, School of Dental Medicine, Sackler School of Graduate Biomedical Sciences, School of Veterinary Medicine, and School of Nutrition to expand the range of their groundbreaking and internationally respected science research--research that is aiding the prevention, diagnosis and treatment of disease while adding to the City of Boston's position as the leading national center in health care, health sciences education and biomedical industries.

As the Master Plan details, cutting-edge health sciences research is also linked to innovative educational programs that produce healthcare professionals and institutions. Tufts is a leading member of this community with affiliations with 37 hospitals throughout the state, and more than 20,000 alumni living and working in the area.

The driving force behind the Master Plan is the need for increased research and academic space. Tufts' current laboratories and research space are seriously overcrowded and do not meet the guidelines that the National Institutes of Health (NIH) uses for its research facilities. Of the total new construction planned, 491,000 gsf will bring existing

laboratories up to NIH guidelines, and provide space for new research faculty and their funded projects.

A summary of the space program is:

	GSF
Research	491,000
Teaching	14,000
Support	33,000
Nutrition School	48,000
Tufts Daycare	5,000
Replacement Administration	50,000
10% Growth Allowance	65,000
	712,000

Teaching and support space will expand by 47,000 gsf, while 48,000 gsf of new space will allow Tufts' School of Nutrition to move from the Medford/Somerville campus to its proper place among the other health science schools. Community uses integrated into the institutional buildings total 13,000 gsf with 7,000 gsf for the YMCA and recreation and 6,000 gsf for retail opportunities.

Tufts currently owns a total of 101,906 sf of land within the area bounded by Kneeland Street on the north, Oak Street on the South, Harrison Avenue on the west and Tyler Street on the east. The Master Plan envisions three new buildings and the refurbishment or reconstruction of the existing M & V Complex within approximately the same area of land but in a reconfigured ownership disposition.

The new disposition exchanges the Posner Hall parcel and building for the BRA-owned 7,557 sf parcel P-2 between Harrison Avenue and Tyler Street and for the 19,331 sf parcel known as R-1 adjacent to 75 Kneeland Street. Tufts-owned land would, with completion of this agreement, equal 102,672 sf. The Master Plan therefore develops 712,000 gsf of new space in a compact manner that both contains the development geographically and frees up an existing building--Posner Hall--for much-needed community uses.

The Master Plan also generates significant community benefits:

Housing Linkage	$3,060,000
Jobs Linkage	$ 612,000
New Day Care	
New Home for YMCA	
Single Room occupancy housing	
Community use space	
New community retail space	
Community ownership of Posner Hall	
600 new permanent jobs	
2000 construction jobs	

As the following detailed sections show, the Master Plan is the responsible development of the university's health sciences resources. This development can be accomplished in a manner that fulfills the potential of these research and teaching and endeavors in such a way as to respect and enhance the surrounding Chinatown community. The plan, with supporting program studies, design guidelines and impacts is presented here.

Tufts has been in Boston for nearly one hundred years, and in the Chinatown/South Cove neighborhood since 1946. Tufts hopes to see the next twenty years marked by expanded medical research in clinical and basic science areas, by innovative and state-of-the-art educational programs, by a relationship with the City and the community that will be mutually beneficial and productive.

All numbers changed

2. THE CONTEXT OF TUFTS IN THE SOUTH COVE

2.1 Tufts University: Then and Now

Since Tufts College was granted its charter from the Commonwealth of Massachusetts, it has been recognized as a leader in education. In 1852, leaders of the Universalist church began the institution on land that was donated by Charles Tufts. Despite its original religious affiliation, no religious requirements were ever imposed on its students. From these modest beginnings, Tufts University has grown to be a research university known for its undergraduate degree programs, as well as its graduate schools. Today at Tufts, 4500 undergraduates study in 44 departments of liberal arts and sciences and engineering. In addition, more than 1000 graduate students are pursuing advanced degrees in International Relations, Nutrition, Engineering and Arts and Sciences. Over 1600 graduate students are pursuing degrees in the Health Sciences at Tufts.

Tufts faculty, besides being excellent teachers, are also involved in research. The University is firmly committed to the belief that in order to sustain excellent teaching, faculty must also be involved in research within their discipline. In the undergraduate schools, you will find faculty teaching classes at all levels who have made important contributions to diagnostic medicine, to the understanding of Reyes Syndrome and to the creation of computers and other machines that enable handicapped individuals to lead independent lives. Faculty in the humanities and social sciences are engaged in research as well. Artists and poets work alongside diplomats and those who are involved in trying to solve the environmental dilemmas of today's society. Some of the research going on in the University includes

* development of a World Studies, multi-cultural, interdisciplinary curriculum,
* development of methods of teaching young children that grow out of the study of how children learn
* basic research in biology and chemistry
* development of Smart Windows , which will revolutionize energy conservation in buildings
* literary and historical research
* creation of growth hormones for use in agriculture
* study of how older people can live healthier lives through nutrition.

In addition, Tufts is nationally and internationally respected for its interdisciplinary approach to problem solving. This is one of the factors that has earned the University an "A1" rating from the United States Agency for International Development--the only private university to merit the highest evaluation. Tufts has committed itself to preparing its students for a more complicated world, but a smaller one in which understanding other languages and cultures will be necessary.

Tufts Health Sciences

Charles Paine Thayer originated the idea to associate a medical school with Tufts College. In 1893, when the College had already been in existence for more than forty years, details for establishing the medical school and its relationship to the College were finalized. The Articles of Agreement for the medical school were signed on August 28, 1893, setting forth that the "Medical School of Tufts College" would be created with seven professorships. The aim of the school was "to educate practical physicians" as broadly as possible. Theory, research and practical application of medical principles had to go hand in hand.

The school was to operate on a small, strict budget for its first three years. The faculty was to serve without compensation from Tufts College. All student tuition, except for ten dollars ($10), was to pay the medical faculty. The ten dollars went towards graduation fees. The Medical School was to operate independently and without financial assistance from the College.

The Medical School opened in October of 1893, housed in a building on Boylston Street, the former home of the College of Physicians and Surgeons. A few weeks before the school opened, an assessment of $50 was levied on each member of the faculty to cover expenses. The building was renovated at a cost of $600. The Medical School was co-educational from its opening. This surprised many because the Medford campus of Tufts had only recently begun accepting women. The students' annual fees were low and they could pay all fees for the three years in advance--a mere $250!

In 1895, the Tufts College Medical School became a member of the Association of American Medical Colleges. Also in that year, two buildings became part of the Medical School campus; leased space on the corner of Boylston and Tremont Streets and a building Tufts had purchased at 30 West Street. Even with shared space from other colleges, space for teaching was soon to become a problem. In 1896, Tufts College took over the management of the Medical School.

In its earliest years, the school operated on a three-year program. The freshman class took anatomy, physiology, history, and general chemistry. Second year students enrolled in pathology, materia medica and therapeutics, and medical chemistry. The senior year was devoted to obstetrics, gynecology, surgery, theory and practice of medicine, ophthalmology and otology, medical jurisprudence, neurology laryngology, and genito-urinary surgery. The Medical School soon adopted a four-year program. Initially, any graduate of an accredited New England high school would be admitted to the Medical School. In 1914, to avoid being labeled a lower-level medical school, a one-year college premedical program became required for applying students. The premed program requirement was eventually bumped up to four years in 1935, and this requirement transformed the Tufts Medical School into a graduate school.

Growing class size and lack of teaching space continued to haunt the Medical School, which needed more space and a closer hospital affiliation. The Suffolk Dispensary, which had served the College of Physicians and Surgeons, continued to be available and there were also arrangements with the Boston Dispensary, Massachusetts General Hospital and New England Eye and Ear Hospital.

In 1896, the Trustees purchased a stone church owned by the Free Baptist Society at the corner of Shawmut and Rutland Street. Since that could not be made ready in time for the opening of the school year, a building belonging to the Chauncy Hall School near Boston Public Library was leased.

In 1897, the church was completely renovated and became the new home of Tufts Medical School. In the same year, the Trustees of the Boston Dental College arranged to have its students study anatomy at the Medical School. Less than a year later, driven by continuing pressures to teach more basic medicine and the increasing difficulty in obtaining cadavers, the Trustees of the Dental College effected a merger with Tufts. The Boston Dental College had operated out of leased space on Tremont Street since it had been chartered in 1868. As it grew, it spread out to facilities on Concord Street and then on Montgomery Square off Tremont Street near Boston City Hospital.

In 1899 Tufts' Trustees acquired land at the corner of Huntington Avenue and Bryant Street and erected a building that would serve both Dental and Medical students.

In 1902, a year after the new building opened, the renovated Baptist Church was sold.

In 1910, the new building was expanded with the addition of a fourth floor. A former stable on Mechanic Street was also leased for additional space.

In 1910, the Forsyth Dental Infirmary for Children was instituted and a building constructed near the Tufts building., A cooperative arrangement existed with Forsyth, Harvard and Tufts Dental Schools. In 1916, the Forsyth-Tufts Training School for Dental Hygienists was established.

In 1911, Tufts entered into an unsuccessful agreement with Grace Hospital on Kingston Street. This arrangement was replaced when a full 50-bed ward at Boston City Hospital was put in Tufts' charge and when increased access to Robert Brigham Hospital and the newly built St. Elizabeth's Hospital were made available.

In 1926, Trustees were actually considering moving the Medical School to the Medford campus and building a hospital there.

In 1928, discussions among Tufts Trustees, the Boston Dispensary and the Boston Floating Hospital began toward the establishment of the New England Medical Center. In 1946, Tufts acquired the so-called Harvard Building adjacent to the New England Medical Center and the final decision was made to sell the Huntington Avenue property. The move to the new facility was made in the spring of 1948. The Medical School had acquired the space it would need for the time.

In 1949-50, the Dental School moved as well. Housing for medical-dental students, Posner Hall, opened in 1952.

In 1959, several floors of the loft-type Arnold Building were leased by Tufts, and in 1962, the A. Warren Stearns Medical Research Laboratories Building was constructed.

The Arnold Building was purchased in 1967.

In 1969, the first formal agreement was signed between Tufts University and New England Medical Center, and Tufts-New England Medical Center, Inc. was formed.

In the same year, Tufts took title to the South Cove Building.

In 1970, the Dental Health Sciences Building was begun.

The tower was dedicated in 1973.

The T-NEMC 900-car garage was completed in 1973. The Tufts Cancer Research Center was funded by the National Cancer Institute and opened in 1975.

In 1979, Tufts School of Veterinary Medicine came into existence.

The Sackler School began in 1981.

The United States Department of Agriculture's Human Nutrition Research Center on Aging opened at Tufts in 1983.

The Sackler Center, housing classrooms, offices and the Health Science Library, was also begun in 1983. Each addition to the Health Science program at Tufts is a logical expansion of the University's belief that the interrelationships of various aspects of medicine are essential. There are many cross-disciplinary and inter-school programs among the health sciences at Tufts. There is also a very active involvement in continuing education within each school, since it is the

University's philosophy that the well-educated health practitioner must continue his/her education in order to best serve the patient and the profession.

At Tufts, all medical, Dental and Veterinary students take first year classes in basic sciences on he Boston campus. The Dental School students remain there for all four years of their program. Medical School students stay on the Boston campus for two years and then begin to develop their clinical skills and take on increasing responsibility, under careful supervision, for patient care in a variety of hospital settings. Veterinary students study the basic sciences in Boston and spend their the rest of their program at the Central New England campus of Tufts in Grafton, working the small and large animal hospitals there.

2.2 The Context of the South Cove

From its beginnings in 1893, Tufts Medical School struggled to create the best facilities for its students and faculty and the best teaching and clinical opportunities. From its first home on Boylston Street, it grew and expanded in curriculum and faculty, later occupying sites on West Street, Shawmut Avenue and Huntington Avenue . In 1928, through its need for clinical affiliation, Tufts began its association with the Boston Dispensary and Boston Floating Hospital, bringing its presence into the South Cove area for the first time. In 1946, Trustees of Tufts College acquired the so-called Harvard Building adjacent to the New England Medical Center, and two years later moved the Medical School into the building beginning the University's history in what is today known as the Chinatown/South Cove neighborhood.

When the first Chinese came to Boston in 1870, they came to the South Cove, an area that had already been home to other immigrant groups. The manmade land, which by then had attracted the railroad and leather and garment industries, provided modest housing for people who came to America from Ireland, Syria, eastern Europe. As early as 1875, the Chinese community in Boston began to be organized with the establishment of the Chinese Consolidated Benevolent Society, an umbrella organization for a variety of family associations and social agencies. The number of Chinese was small, however, and the community had not yet found its voice. The Chinese in Boston at this time were predominantly male, due to immigration laws, and the tenement housing of the area suited their needs. In 1914, the YMCA established its Chinatown branch to serve this population.

By the time Tufts moved to the South Cove/Chinatown area, the Boston Dispensary had expanded its operations and facilities and the Floating Hospital for Children had acquired a permanent land-based home. During the Depression, nearly one third of the housing in Chinatown was destroyed by tenement owners in order to avoid paying taxes on it. The Immigration Act of 1946 allowed the first major influx of Chinese to the United States and the population of Chinatown began to grow and to include more women and families.

When Tufts acquired property in the South Cove area, developed the relationship with New England Medical Center and consolidated its programs there, the Trustees believed that the University's Health Science complex would remain there. Proximity to the Hospital, which itself was growing, and the fragmented nature of the partly run-down residential, commercial/manufacturing neighborhood, led the Trustees to believe that the Medical School would be able to grow here as it needed.

What did the Chinatown/South Cove area look like then? The population was still in transition. The leather district which had grown with proximity to the railyards, and other manufacturing interests that had sprung up in the area were a major factor. The residential stock was showing the wear of several generations of immigrants. Housing had not been replenished and, in fact, had been diminished by several periods of financial contraction.

In 1955, when Kevin Lynch prepared a plan for NEMC and wrote about the South Cove area which was then in transition to the Chinatown we now know, he described the area as "decadent and substandard," "an area of physical dilapidation;" he described the housing as an "inadequate supply of very bad dwellings." In 1955, no new residential building had been constructed in the area since at least World War I. In 1955, Lynch determined that the area bounded by Tremont, Kneeland, Albany and the railroad consisted of 47 1/2 gross acres. According to 1950 census data, the population of the area was roughly 3000. While the residential future of the area seemed in question, opportunities for institutional growth were encouraging.

Many things happened in fairly rapid succession. Tufts and the New England Medical Center were already growing. The Chinese community was growing,too, although slowly at this point, due to immigration laws. The construction of the Central Artery, in 1953-1959, took half the buildings along Leong Street and in 1963, the Mass Turnpike Expansion eliminated more housing. With a population that was growing, institutions that were growing and available land that was not, conflicts were inevitable. The Urban Renewal Plan, created at a time when the central goal was to turn around areas of general decline, sought to instigate rehabilitation and expand the City's tax base. The planners involved thought they could build both the residential character of Chinatown and the medical institutions residing there without any conflict. Competition for land and differing priorities began to develop into a serious division between institutions and the developing Chinatown.

By that time, Boston Dental College had affiliated with Tufts and then become Tufts School of Dental Medicine. The Dental School moved with Tufts to Huntington Avenue and then to the South Cove where it originally occupied part of the Medical School facility. In 1952, Posner Hall opened to provide housing to Medical and Dental students. Through the 1950's and 1960's Tufts acquired the rest of the M & V Building and properties at 193 and 203 Harrison Avenue. In the 1960's, the Combat Zone began to infringe on the South Cove, and in 1965, the South Cove Urban Renewal Plan was enacted. Around the same time, immigration laws were further liberalized and a period of significant growth among Boston's Chinese population began. In 1970, the Dental Health Sciences Building was begun. In 1983 the Sackler Center was constructed and in 1986 the HNRC opened.

Between 1968 and 1978, Chinatown made many efforts to coalesce as a community and to speak for and demand fulfillment of its needs. Many community organizations sprung up. And community activists began planning for new housing. Although they eventually added 1473 units of housing to the Chinatown/South Cove community, in the same period of time, the population had more than doubled.

Although the City of Boston began recognizing Chinatown as a distinct neighborhood and actively including it in planning for the area with the Urban Renewal Plan of the 1960's, it has been very difficult to achieve balance among the interests of the various parties who lay claim to what started as filled in land and has now been home to so many citizens--commercial, residential and institutional--of Boston. The establishment by Mayor Raymond Flynn of neighborhood councils, and in 1985 of the Chinatown/South Cove Neighborhood Council, marked a further step in the community's empowerment.

With the development of the Chinatown Community Plan in 1990, the community has had an opportunity to lay the groundwork for its future and now Tufts brings to the same community, plans for the institution's future. Recognizing that the past has not been a good example of how conflicting priorities can be balanced and how neighbors can share a community to mutual benefit, Tufts now embarks on a process that will describe its plans for the next twenty years. These plans do not entirely coincide with the specifics spelled out in the Community Plan. However, in spirit, the Community Plan has guided much of the thinking that underlies Tufts' program. The University recognizes the community's goals of creating more housing, striving to develop more open space, creating an environment that is both friendly and safe to pedestrians, and linking the segments of Chinatown that are separated by Kneeland Street. Further, the University acknowledges that it has a role to play as a neighbor in the community of participating with Chinatown agencies and individuals in being of assistance in education and training, providing job and business opportunities and generally contributing to the well-being of the community.

2.3 History of Planning for the South Cove/Chinatown

A number of plans have been prepared over the last half century or so for the South Cove and its adjacent neighborhoods. The plans have ranged from general concepts for different neighborhoods to specific master plans for major institutions. The study area has also been subject to major physical change with the development of the Massachusetts Turnpike Extension as well as the Urban Renewal initiatives of the 1960's. The various plans are shown in the Appendix to this report.

One of the earliest planning initiatives for the Chinatown/South Cove area was prepared in 1955 by Kevin Lynch for New England Medical Center a few years after Posner Hall had been built as housing for medical and dental students (Fig. 11 in Appendix). Lynch described the area then as "decadent and substandard" and used institutional needs for expansion as a mechanism to redevelop the then under-developed area. Lynch's prognosis acknowledged the Chinese community which was in need, even then, of "decent housing and adequate recreation in the vicinity." Since his study demonstrated "no prospect for an automatic, self-generating renewal of this area," he put forward a plan that would have the hospital providing the renewal impetus.

The Urban Renewal Plan of the 1960's prepared by the Boston Redevelopment Authority (Fig. 12 in Appendix) was the next significant planning initiative because it set the legal framework for land use and development priorities. The legacy of that plan is apparent today in the zoning and ownership of certain parcels in the South Cove/Chinatown area. For example, parcels that were taken by the City for renewal purposes were designated for residential (R parcels), commercial (C parcels) and institutional uses (P parcels). The overall goal of the renewal plan was to reverse blight by acquiring strategic parcels which could then be sold for development at below market value. This would stimulate renewal of the area.

A third plan was prepared in the 1960's by T-NEMC (Fig. 13 in Appendix). This was the first plan prepared by the two major institutions in the area, and their first attempt to coordinate institutional needs within both the context of the area and the Urban Renewal Plan. While this plan was overly ambitious, it did continue several themes that had been developing through these earlier planning efforts. Institutional development would remain clustered together, and the Medical School would develop new buildings on the Posner lot.

A review of these various planning attempts demonstrates that the often conflicting demands of the different inhabitants of the neighborhood have not easily nor completely been reconciled: the plans of the institutions often took little account of the neighborhood concerns, especially that of housing. The more recent planning initiatives, however, seem to resolve the institutional needs with the residents of the neighborhood far more successfully than the early planning efforts.

The most recent and successful plans for Chinatown and the surrounding area have come out of a process of collaboration between the Boston Redevelopment Authority and the community. This process produced the Chinatown Community Plan and the Midtown Cultural District Plan.

The Midtown plan, completed in 1989 (Fig. 14 in Appendix), establishes the boundary of the South Cove/Chinatown to the north and west, and creates the framework for developing this part of Boston into the major cultural node for the City. It recommends reinforcing the existing historic theatres with "small new cultural facilities which will be

accessible and affordable. Combined with restaurants, shops open into the evening, night clubs, cabarets, sidewalk cafes and public art." This plan also indicates an expansion of Chinatown north of Kneeland Street and west towards Tremont creating an overlapping range of uses that should create a lively and diverse environment.

The University Hospital Plan of 1989 (Fig. 15 in Appendix) outlines the framework for the development of the area to the south of the South Cove/Chinatown neighborhood. It outlines a mix of residential, institutional and commercial uses in the corridor from Herald Street to Massachusetts Avenue between Washington Street and the Southeast Expressway.

The most recent NEMC Master Plan (Fig 16 in Appendix) was prepared over the past three years and approved by the Boston Redevelopment Authority in 1990. It envisions three phases of development and outlines the new space needs the hospital projects and the facilities they plan to meet these needs primarily in the area bounded by Washington Street, Nassau Street and Harrison Avenue. The exception to this plan is NEMC's interest in the development of the hinge block. This would carry hospital uses to the northern side of Kneeland Street, and reduce some rebuilding efforts within the current hospital complex.

The Chinatown Community Plan (Fig. 17 in Appendix), also completed in 1990, is a comprehensive effort to set forth the community's needs and strategy for fulfilling these needs. This plan has set a framework for institutional planning efforts and has been critical in informing the thinking behind the Tufts Health Science Master Plan. In its community plan, Chinatown outlines areas it sees for residential, commercial and institutional development. Almost the entire Tufts Health Sciences campus falls within a special study area.

The Chinatown Community Plan and the Tufts Health Sciences Campus Plan lay the foundation for coordinated growth for the next twenty years and while these plans do not coincide exactly, they combine, with the NEMC Master Plan, to form a coherent framework for residential and institutional development in the Chinatown area.

2.4 Tufts and the Chinatown Community Plan

With the development of the Chinatown Community Plan , the community has analyzed its strengths and problems and formulated its needs for the future. Tufts has likewise looked at its Boston campus, assessing the utility of the space it currently owns and uses and projecting its program twenty years into the future. In comparing the goals of the Community Plan, and those of Tufts, there is clearly considerable overlap.

The Community Plan seeks to preserve and reinforce the neighborhood of Chinatown, protecting existing homes and businesses and upgrading the housing and economic base. Its main goals are to strengthen the culture, history and environment of the community; to protect Chinatown's land base; and to build "land bridges" at the Hinge Block, the Chinatown Gateway, and the Turnpike Air Rights area.

Tufts Master Plan, in addition to meeting the future needs of the health sciences research and teaching, also helps meet the future needs of the Chinatown community, including:

Create more housing. In Tufts land exchange with the BRA, Posner Hall is redeveloped into several community uses, including housing, YMCA athletic/recreational facilities, community offices and community meeting spaces shared with Tufts. Single room occupancy units will be created in Posner, fulfilling Chinatown's specific need for that type of housing. In addition, Tufts supports the community's efforts to build additional family housing on Oak Street and elsewhere.

Direct institutional growth away from residential Chinatown. Chinatown is a small, densely developed and populated area. Tufts is working to keep its institutional needs contiguous to existing University structures and away from the most developed residential areas of the neighborhood. Future student housing and affiliated research will be located off the campus. The University also looks forward to the opportunities that will be created for community expansion by future air rights projects.

Maintain existing businesses and create new business opportunities--new retail space. Daily, the university population buys goods and services from Chinatown merchants. The availability and health of local businesses is an asset to the University population. Tufts participates with the Chinatown Neighborhood Business Association and holds periodic trade fairs in order to encourage University patronage of local businesses. In addition, Tufts is creating new retail space for local businesses in the new buildings described in the Master Plan.

Ensure public safety. Tufts participates in the Chinatown Public Safety Committee, and Tufts Police cooperate with community leaders and the Boston Police. A high level of public safety is a primary concern and priority for Tufts, both today and the for future, and the University will continue to make public safety a high priority for University employees and in the design of new University facilities.

Maintain the neighborhood character and scale of the area. Tufts is committed to working with the community to balance the difficult task of creating the space it needs for future growth and being sensitive to the neighborhood. Since high rise buildings already exist along Kneeland Street, Tufts will keep its tallest structures closes to Kneeland Street, and to scale height down as buildings approach more residential areas. Tufts has made every effort to respect the community's desires in the design of the Master Plan.

Create open space and maintain welcoming pedestrian environment. Tufts believes that its Master Plan will add greatly to the pedestrian environment. Principally, pedestrian traffic will be allowed between the mid-Posner building and Posner Hall. This will bring the community together by creating a pedestrian link between Tyler and Harrison and making travel between Tyler Street and the Oak Street area easier. At this location, adjacent to Posner Hall, a plaza will also be created, responding to the community's request for open space. A small landscaped area can be developed here with benches and plantings. In addition, with each new phase of the Master Plan, improvements will be made to the streetscape around the campus, with plantings, etc.

Ensure maintenance of good public transportation. While there is little that Tufts can do to actually add to the maintenance of public transportation, the University will consistently support the community in trying to preserve good service and safe transportation for the South Cove/Chinatown area. Many Tufts students and employees rely on public transit just as much as members of the Chinatown community do.

Enhance Chinatown's architecture and streetscape to reflect its heritage. Tufts is committed to conforming with design specifications and guidelines created by the BRA for any new development in Chinatown. In addition, the University will make every effort to make certain that its architects are sensitive to surrounding structures and the cultural heritage of the area.

Ensure traffic safety and keep parking away from residential areas. The development of the Master Plan will allow for the creation of some underground parking off Harrison Avenue and Tyler Street. Tufts is willing to discuss with the community the feasibility of contracting for spaces in the Parcel C parking garage. The University expects, however, that the bulk of its parking in the future will be located on the other side of the Mass Turnpike. The University will work with its students and employees to encourage use of public transportation and to keep traffic, as much as is possible, away from the congested streets adjacent to the Medical School and the Chinatown community. Traffic safety will remain a key factor in Tufts' planning efforts.

Tufts and the Chinatown community share many mutual goals for the South Cove area. These will be accomplished with good will and cooperation between all parties. Recognizing that the past has not been a good example of how different priorities can be balanced and how neighbors can share a community to mutual satisfaction, Tufts now embarks on a process that describes its plans for the next twenty years. Beyond good planning, the University recognizes that it has a role to play as a neighbor in contributing to the well-being of the community.

3. TUFTS UNIVERSITY: TODAY AND IN THE FUTURE

3.1 Boston in the 1990's: The City Economy

In Boston, the economic presence of the medical industry is nearly twice the national average.[1] It is currently the largest employer in Boston and still growing. Nationally, one in seven new jobs created in the 1990's will occur in the health care sector.

As the industry continues to grow and expand nationally, new space brings with it new jobs at a variety of educational levels. Boston stands to gain, proportionately, more than any other city in the country from this growth in medical industries. This growth will only be realized, however, if the City's institutions are allowed new space to accommodate these opportunities.

Further, the City is a primary driving force for the economies of Massachusetts and the New England region. It is estimated that 564,000 jobs will be created in the 1990's, and fully three quarters of these will be in the Boston area.[2] Approximately one quarter of all goods and services produced in Massachusetts come from Boston.

During the 1980's, health care and related fields experienced a tremendous period of growth nationwide. By 1986, they had grown to represent eleven percent of the Gross National product and are projected to grow to fifteen percent by the year 2000.

Fueled by the presence of top-notch hospitals, research institutions, private laboratories and clinics, the health care industry and related fields represent the Commonwealth of Massachusetts' largest employers and generate approximately 11% of the City of Boston's total employment opportunities. Since 1976, Boston's medical industry has grown by one-third. There is every indication that health care and biotechnology will continue on this course with the City of Boston outpacing the nation in health and research employment growth.

Health care, biomedical research and education are major export industries for Massachusetts. Boston is a national center for health care and research and serves patients from across the country and around the world. The result is a significant influx of money into the state and a source of continued funding for research.

Boston's institutions are leading recipients of research grants, both public and private. On a per capita basis, Massachusetts is the leading recipient of all National Institutes of Health (NIH) research funding, receiving more than 11% of all NIH funds--Tufts, with $19 million from NIH annually, contributes to this statistic. Of the top eleven U.S. hospitals in NIH grants received, nine are in Boston. While the overall growth in NIH funding has been inhibited by federal budgetary constraints, Boston's institutions continue to receive an increase share,m as reflected in Tufts own funding record. Recent data on the medical community indicated that this translates into an annual payroll of over $1 billion with 50,000 Boston area residents employed on a full-time basis.[3]

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[1] "Survey of Boston's Health Services Economy: Interim Report," The Boston Redevelopment Authority.

[2] Howell, Dr. James M.: "The Howell Report: The Boston and Regional Economy into the 1990's: The Prospects for Economic Recovery," The Boston Redevelopment Authority, November 8, 1990.

[3] Ibid.

In the 1990's, the City of Boston can continue to expand medical research activities, provided it can expand its facilities and continue to produce a highly educated work force in growing numbers. For the latter, the metropolitan area's many graduate schools are a prime source for top-grade medical research staff. A large number of students who graduate from Boston area academic institutions remain here to pursue employment, or to further their education. The faculty and research staffs at area medical and academic institutions also represent the intellectual infrastructure that is a significant resource to the community. Tufts University contributes significantly to this pool, with approximately 20,000 alumni of all of its schools residing in Massachusetts.

A key component of Boston's success as a leader in the knowledge-based economies is the ability of its institutions and private companies to apply research findings to product development. Small companies in the incubator stages develop strategic alliances with universities as a means of achieving market strength before they are able to capitalize the production of goods and services on their own. Tufts is one of Boston's most active universities in linking research faculty with young industries.

Boston's competitive advantage in what have been termed the "knowledge-based economies" is unparalleled by any other city in the United States and will be key in the City's economic growth. These industries include medical services, biotechnology and the pharmaceutical industries. Their common denominator is their dependence on continued research, technological breakthroughs and new product development. The market for these industries is a global one rather than a national one. Boston, due to its unique combination of resources, is one of the leading centers for research and new applications in the world.

Although the competitive advantage of one locale over another is generally achieved through low production costs, including inexpensive labor, the knowledge-based industries are different. Success in these industries is dependent on factors such as an institutional infrastructure, an educated labor pool, an ongoing research environment, available venture capital, and a public policy environment that is encouraging.[4] Chief among Boston's unique resources is its institutional infrastructure. The Boston metropolitan area is home to more than 50 colleges and universities with an additional 260 in the New England region. Among them are some of the most preeminent universities in the nation. The City is also home to 31 well-established hospitals and three well-respected medical schools The result is a synergy and environment where pooled research findings lead to innovations in medical education, care and product development. Tufts University is a leading member of the institutional community, with affiliation with thirty-seven hospitals throughout the region. The City of Boston is actively nurturing medical industries through its economic development and planning policies. An integral component is the expansion of space for medical and research institutions. The City has designated sites for medical facility expansion, including the Charlestown Navy yard, Olmstead Plaza in the Longwood Medical area, and the South Station Technopolis area. The City has established policies and modified its zoning to encourage medical institutions to locate additional facilities in these areas. Boston has also channeled job training funds into the development and implementation of programs to assist its residents in developing the technological skills necessary for the medial industry.

The City of Boston has recognized the key role that the knowledge-based economies will play in its continued economic growth and vitality. These industries are important export industries for Boston, and provide important new jobs for Boston residents at all education levels, with many offering the opportunity for career growth.

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[4] Ibid

Additionally, the continued development of these industries brings many spin-off benefits for the City. Area institutions involved in these industries spend significant amounts on the purchase of goods and services for City and State businesses, amounts which grow as institutions expand. Their workers also have significant spending power.

As medical industries grow and expand, certain related industries locate in the Boston area as well, such as patent law, product manufacturing, and ancillary services to these industries. Additionally, the continued growth and success of the knowledge-based economies in Boston enhances the City's reputation as a national and international leader in these fields.

3.2 Tufts' Health Sciences Campus: Research and Education Program

Research

Tufts Health Sciences Schools brought more than $44,000,000 in sponsored research to the Boston campus in 1991; an increase of 9% from 1990. Research on the Boston campus continues to grow despite funding constraints at the federal level and growing national competition for biomedical research funds. Part of this growth is due to substantially increased corporate sponsored research particularly in the area of biotechnology. The Health Sciences Schools currently have research agreements with over thirty pharmaceutical and biotechnology companies. But our continued success can be credited to Tufts basic science research strengths in areas most critical to the priorities of health care, biomedical and pharmaceutical professions, including molecular biology, immunology, infectious diseases, hematology, neurosciences, transgenic animal sciences and nutritional sciences.

The amount of funding an institution receives from the National Institutes of Health (N.I.H.) is considered to be a good indicator of its research program's standing. The funding level of N.I.H. is about $21 million annually. In 1988, of 1200 schools, hospitals and research institutions receiving N.I.H. funding, Tufts ranked 71st. In terms of productivity, our ranking is substantially higher. A recent ranking of research productivity of 123 U.S. medical schools (Karl W. Lanks: "Academic Environment", Faculty Press, Brooklyn, N.Y., 1990) places Tufts highly in categories of number of publications per investigator (12th), number of grants per investigator (8th) and grant dollars per investigator (13th).

Approximately 90% of faculty investigators at Tufts with assigned research space have funded support as principal investigators. The remaining 10% are either co-investigators or have proposals pending. Yet no further growth in funded research efforts can be sought without additional space. Current research space brings in about $230 per square foot. Nationwide, medical schools generally average $130-150. This high level of "productivity," rather than representing efficiency or effectiveness, indicates significant overcrowding. There is no ability to add new projects into research space that is already squeezed as far as it can go. Although the high per square foot rate at Tufts seems beneficial, the dense level of current lab use is actually inhibiting researcher's productivity.

Within the 658,000 gsf of existing University space (owned and leased), research uses currently occupy 212,000 gsf, education uses 156,000 gsf and the remaining 290,000 gsf is dedicated to various administrative and support services. (See Section 4.2, Existing Land and Space and Appendix 6.3, Existing Building Uses and Areas.)

A sampling of representative research projects which will be enhanced by increased space under Tufts' master Plan include:

Research at the School of Dental Medicine	• laser dentistry • dental implants • oral pathology and radiology • othodontics and orthodontic appliances • the diagnostic T-Scan • forensic dentistry • oral and maxillofacial surgery
Research at the School of Medicine	• auto-immune deficiency (AIDS) • cancer • cystic fibrosis • Alzheimer's disease • Lyme disease • geriatrics • refugee and immigrant health care • environmental health • stroke
Research at the Sackler School of Graduate Biomedical Sciences	• genetic techniques to uncover how bacteria and viruses cause disease • the immune system • DNA transforms • tumors • related research at the affiliated Center for the Study of Drug Development (an independent non-profit research organization affiliated with Tufts. The Center is committed to the exploration of scientific, economic, public policy and regulatory issues that affect pharmaceutical research and development throughout the world)
Research at the School of Veterinary Medicine	• animal genetics • molecular biology • wildlife and environmental issues • biotechnology and international livestock development • preservation of species and plight of pastoral peoples • animal ethics • veterinary vaccines and treatment
Research at School of Nutrition	• clinical nutrition • nutrition and homelessness • food availability • dietary habits • food policy through its Food Policy Institute and its Center on Hunger , Poverty and Nutrition Policy • nutrition and aging studies in conjunction with Tufts USDA Human Nutrition Research Center on Aging in Boston

Increased space will also allow Tufts to pursue the following new projects which faculty are already discussing:

Department of Pharmacology:

The largest single proposed program development is expansion of the recently created Department of Pharmacology. Pharmacology is the discipline which studies the actions of drugs, such as efficacy, side-effects, etc., and the development of new drugs and new ways to administer drugs. Expanded facilities will permit combining basic pharmacology and clinical pharmacology which studies the effects of drugs in humans. Currently in the Boston area, there is no single academic department with joint responsibility in basic and clinical pharmacology. This will provide a powerful scientific resource to collaborate with all the other clinical disciplines which use drugs as therapeutics or anesthetics/analgesics. Academic pharmacology is the link between basic biomedical research and the development of useful and effective drugs. Principal departmental collaborations are anticipated with Medicine, Psychiatry and Anesthesia.

Projections show this Department needing 50,386 gsf and generating 38 new jobs.

Center for Biomedical Applications

A central computer imaging facility combined with microscopy (light and electron) laboratories to form a center for biomedical imaging applications serving a wide variety of biomedical disciplines that depend upon image visualization (molecular to organ to whole body levels). A highly skilled team of biomedical image analysis experts together with a high performance image processing system will acquire data from the adjacent Microscopy Laboratories and, via high speed data networks, from laboratories (e.g., molecular NMR and X-ray) and clinical facilities (M.R.I. suite, CAT suite, X-ray, cytology and histology laboratories, etc.) for storage and manipulation of digitized image data. Modern imaging techniques provide a level of analysis and interpretation of visual data orders of magnitude faster and superior to conventional human visual analysis. The Center will be based in the Department of Anatomy and Cellular Biology with major links to Biochemistry, Pathology, Physiology, Neurology, Neurosurgery, Ophthamology, Radiology, Rehabilitation Medicine and Restorative dentistry.

Projections show this center[5] needing 41,557 gsf of space and generating 15.5 new jobs.

Reproductive Biology Research Center

A major expansion in the area of human and animal reproductive biology focusing on broad-based and multidisciplinary research at the cellular and molecular level including cell-matrix interactions, molecular biology, and generation of transgenic animals by both DNA micro-injection and embryonic stem cell methods. Basic aspects of fertility and embryonic development will be the focus of major attention. This will be a joint effort involving Anatomy and Cellular Biology, Obstetrics and Gynecology, Comparative Medicine (Veterinary School), Biochemistry and Pathology.

Projections show this center[6] needing 55,650 gsf of new space and generating 25 new jobs.

Center for Biomolecular Structural Analysis

An integrated center for the application of magnetic resonance imaging (MRI) spectroscopy and X-ray diffraction analysis to biologically important problems. These powerful analytic tools will provide capabilities in three major areas:
1) Macromolecular structure and biological function; 2) Non-invasive spectroscopy of cells, organs and whole organisms; 3) Imaging of tissues and organs within whole organisms.
Among the application which will benefit are protein-DNA interaction, enzyme structure and mechanism, design of enzyme inhibitors for use as drugs, and structure and mechanism of blood clotting proteins, studies of drug metabolism in cells and organs. Particular emphasis will be put on enzyme inhibitors as drugs tp treat severe immune deficiency diseases such as AIDS and auto immune conditions such as arthritis and lupus.

Projections show this center[7] needing 30,000 gsf of new space and generating 18 new jobs.

[5]Assumed to be 50% of the total projections for Department of Anatomy and Cellular Biology.
[6]Assumed to be 20% of the following departments: Anatomy, Obstetrics/Gynecology, Veterinary, Biochemistry and Pathology.
[7]Assumed to be 50% of Biochemistry Department.

Education

From the beginning of Tufts University's involvement with the health sciences, the emphasis was on educating "practical physicians" who would be compassionate and well-educated doctors and care-givers. That philosophy continues today. Tufts University health sciences schools are educating physicians and researchers to face the complex medical issues of the next century with innovative and interdisciplinary curricula that have won Tufts national and international respect. The health sciences education programs graduate an average of 148 doctors, 135 dentists and 62 veterinarians each year, in addition to 10 students who have achieved masters or doctor of philosophy degrees in biomedical research areas. The health sciences education programs are supporting not only Tufts' research breakthroughs, but supplying the local, national and global biomedical communities with health care providers and researchers dedicated to alleviating suffering.

The health sciences schools attract students from all over the world. The presence of nearly 1000 students from outside of Massachusetts each year on Tufts' Boston campus means that hundreds of thousands of dollars are coming into the Commonwealth and circulating through the economy.

School of Medicine

The medical school's innovative curriculum follows a cell-to-organism model and emphasizes problem-based learning, a method that relies heavily on case studies. Through the work of its clinical departments, the medical school has recorded major achievements in many areas, including heart and liver transplants, combatting strokes, analyzing the role of diet in preventing cancer, surgery for brain tumors and diagnosis and treatment of arthritis in children.

Within the medical curriculum itself, the focus is on Problem Based Learning, which gives students the opportunity to develop good communication skills, including problem-based and self-directed learning, critical reasoning, and early integration of different parts of the curriculum. TUSM maintains a strong commitment to the population health aspects of medicine as seen in the Tufts Health of the Public Program. Tufts also hosts the New England Health & Poverty Action Center and the Center for Refugee and Immigrant Health Care.

Tufts is the only medical school to offer a four-year combined MD/Master in Public Health program and also offers a MD/PhD option. The MD/MPH option, which allows students to receive a combined degree in 4 years as opposed to five year programs at other schools, recognizes the evolving need for public health trained physicians who possess an advanced level of understanding of the societal problems related to disease prevention, the environment and health problems of the developing world.

Tufts has always been a medical school that is especially sensitive to the needs of community medicine. Through its commitment to population health aspects of medicine, including environmental health, primary care and family medicine, epidemiology and biochemistry as well as the social and economic aspects of the health care system, Tufts has come to attract students who are particularly interested in these aspects of medical practice. Tufts Department of Community Health focuses on new patterns of morbidity and mortality in a changing population and on the role that life style, economics and social and environmental factors play in the health of the community.

The Tufts "Health of the Public Program" is centered primarily in the Department of Community Health. Faculty and staff from the Department of Community Health, the Division of Family Medicine and the Division of Nutrition provide the core of health professionals. Other key resources include the New England Health and Poverty Action Center, the Center for Refugee and Immigrant Health Care at TUSM, the Institute for the Improvement of Medical Care and Health at New England Medical Center and the Tufts Associated Health Plan.

The Sackler School of Biomedical Science

In 1980, the Sackler School of Graduate Biomedical Sciences was established in cooperation with Tufts other health science schools and the Graduate School of Arts and Sciences to broaden the university's investigations in multi-disciplinary health sciences. In microbiology, researchers are applying genetic techniques to learn about the mechanisms that lead bacteria and viruses to cause disease; in immunology, their colleagues are addressing how various immune responses work; in biochemistry other faculty are studying how tumors are transformed by DNA viruses; and in neuroscience, a group of researchers is exploring the underlying mechanisms of Alzheimer's disease. Basic science research at the Sackler School is of direct relevance to understanding, treating and preventing specific human diseases. The dedicated basic science researcher is the driving engine for medical progress. Maintaining a cadre of extremely able and well trained teacher-scientists is one of the Sackler School's primary missions.

School of Dental Medicine

The Tufts Dental School's philosophy is based on preventive dental medicine and training practitioners to offer the finest in-patient treatment. The curriculum stresses oral diagnosis and treatment planning and the program is designed to graduate a doctor of dental medicine who will be prepared to practice general dentistry as it is expected to evolve in the years ahead. It is anticipated that the general practitioner of the future must be able to deliver a wider range of services to a more diverse population than has been the case in the past. The curriculum includes clinical experience with a variety of special patient groups which represent the disciplines of geriatrics, implantology, oncology, temporomandibular joint disorders, and dentistry for the handicapped. Nearly 6000 new patients are admitted to the clinics each year.

The scope of dental practice is now expanding to encompass previously elective health concerns since preventive measures have virtually eliminated tooth decay as the central concern of professional practice. Proper tooth alignment, the use of metal implants in jaw reconstruction, the diagnosis and treatment of oral cancer, the management of head and facial pain, the role of proper nutrition, dentistry for the handicapped and for those with other complicating medical conditions, new types of restorative materials, denture implants--all of these are important new aspects of the profession. The dental checkup itself is assuming a broader function with the detection of systemic, non-oral diseases, such as hypertension, pernicious anemia, arthritis or AIDS. Dentistry is growing more complex and more rooted in biomedical science and technology.

Tufts addresses these issues with new students and through several advanced education programs for those who have completed Dental School and wish to further their studies. Certificate and advanced degree programs in a variety of areas of specialization, such as endodontics, oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontology, and prosthodontics are awarded after at least two additional years of study.

School of Veterinary Medicine

New England's only veterinary school was begun at Tufts in 1979, and is located both in Boston and in Grafton. Although a young school, and one of the smaller ones in the country, its reputation and scope have already made it one of the best known and respected programs nationally. Along with preparing students to care for small and large animals as well as wildlife, faculty are exploring how to improve animals used as sources of food. Through the Wildlife Clinic, Tufts students and faculty are involved in protecting and treating animals in danger of extinction. This also involves studying how environmental hazards affect animals and utilizing the information to better safeguard humans.

Tufts offers students the opportunity to pursue several specialties, including innovative projects in equine medicine, ethical issues involving animals, work at the Tufts Laboratory at the Marine Biological Laboratory at Woods Hole and at the Ambulatory Clinic for farm animals in Connecticut.

The School of Veterinary Medicine is a major research entity: over $5.3 million of research dollars were received in 1991. The school ranks fifth out of 27 U.S. veterinary schools in grants from the National Institutes of Health (NIH). At present, the 300 full-time students carry out their first two years of study on the Boston campus and their final two years in Grafton. On the Grafton campus, small and large animal hospitals provide learning environments for Tufts students and a tertiary care referral hospital for local veterinarians.

It is the only school of veterinary medicine in New England and the only one in the country not dependent on state funds for more than 50% of its operating budget. The school has a particular emphasis on biomedical and biotechnological research and has assisted over 35 private companies in Massachusetts with their research programs.

3.3 The University's Impact in the Boston Economy

Colleges and Universities in Massachusetts have an enormously positive benefit on the state's economy, especially in difficult times. The majority of students at the state's independent institutions come from outside Massachusetts, bringing added dollars to the economy.

Federal, corporate and foundations funds awarded to Massachusetts institutions are also spent on goods and services locally. In a 1987 study, the Association for Independent Colleges and Universities in Massachusetts found that independent institutions had produced $4.48 billion in direct spending. The 255,000 students and their visitors accounted for another $1.3 billion of direct spending. The indirect impact of that $5.78 billion in another $2.36 billion of spending in other sectors of the economy. [8]

Tufts University makes a significant impact on the economy of the community around it, the City of Boston and the state. The University employs thousands of people and pays them competitive salaries. It purchases millions of dollars worth of goods and services annually. Its students, faculty and staff deposit money in local banks, rent apartments and shop with local merchants.

The following charts spell out some of the economic and social benefits that Tufts Health Science campus brings to Chinatown and the City of Boston in the categories specified.

Personnel

Tufts University employs 1359 paid full and part-time staff and faculty who work on the Boston campus. (An additional 2000 in and around the Boston area have unpaid medical school faculty appointments.) Of the 1359 employees on the Boston campus, 303 (22%) live in the City of Boston and 53 (4%) live in Chinatown.

These can be broken down into the following job categories:

	Boston	Chinatown
Executive/Administrator	9	2
Faculty	48	19
Non-Faculty Professional	76	17
Clerical/Secretarial	78	4
Technician or Paraprofessional	41	2
Skilled Crafts Worker	4	2
Service/Maintenance Worker	47	7

There are an additional 111 residents of the City of Boston who are employed by Tufts on the Medford/Somerville and Grafton campuses. Tufts' total work force is 3,613 full and part-time employees.

While Tufts has, for many years, sent notices of job openings to Chinatown agencies, the University's Department of Human Resources will begin holding quarterly job fairs in conjunction with community agencies.

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[8] "An Economic Impact Study of Independent High Education in Massachusetts", 1986-87, Social Welfare Research Institute at Boston College.

Payroll

The Tufts employees who live in the City of Boston receive an payroll of $7,400,000 (based on FY'90 salaries). The 53 employees who live in Chinatown receive an annual payroll of $1,318,260. Currently, the total payroll for the Boston campus is $37,258,000.

Purchasing

Tufts University has a policy stating that purchases of goods and services will be directed to local suppliers whenever possible. From September 1989 to the beginning of December, 1991, Tufts University (includes all campuses) has spent $8,722,000 with business concerns in the City of Boston. Of that total, $1,516,000 has been spent in the Chinatown business community. This represents purchases from more than 150 businesses located in the 02111, 02116 and 02118 zip codes alone.

Recently, the University began a program of trade fairs for Asian Businesses, held in conjunction with the Asian/American Chinatown Business Association, increasing its efforts and encouraging other colleges and universities in the Greater Boston area to purchase more goods and services from Asian businesses. These fairs will be held annually as part of Tufts' effort to direct more of its business to Chinatown vendors.

Students

There are currently 621 students studying for the M.D., 586 enrolled in the Dental School, 263 students in the Veterinary School, and 154 students pursuing advanced studies in those areas and Biomedical Sciences. Of these 1,624 students, approximately 1180 are studying regularly on the Boston campus, living in the areas, depositing money in local banks and using local merchants for purchasing the goods and services they require.

Admissions and Financial Aid

Each year, the number of applicants for admission to the medical, Dental and Veterinary Schools exceeds the number of places available.

For the class of 1994, the Medical School received 5,038 applications for a class of 152. Fifty eight students applied from the City of Boston. Tufts accepted 497 students from the pool of applicants and five of those are from Boston. Twenty-five of the 621 medical students are from the City of Boston.

Of the current Medical School enrollment of 621 students, none have identified themselves as having grown up in Chinatown. And from the information we have, we cannot identify anyone applying this year from Chinatown. However, 137 students are Asian American students.

Among the 4500 undergraduates at Tufts, about 400 of them have identified themselves as Asian-American. In addition, there are 42 students on the Medford/Somerville campus from Taiwan and 71 from mainland China.

Donations and Service Learning moved to Sect. 5

4. TUFTS HEALTH SCIENCE CAMPUS

4.1 Master Plan: Objectives and Guidelines

The institutional master plan for the Health Sciences Campus of Tufts University has three major objectives and a number of specific objectives within those categories that will guide the development and implementation of the master plan for the next twenty years.

The major objectives are:

> That the Master Plan respond to and accommodate the academic and institutional needs of the University in its mission for the next twenty years.
>
> That this planning be done within the framework of the Chinatown Community Plan prepared in 1990.
>
> That the Master Plan reflect the City-wide concerns and objectives for Boston, including economic objectives as well as those related to physical planning and development.

The specific objectives that the master plan has are related to the academic and research mission of the institution. They are:

> That the current facilities be brought up to NIH normative space standards in all areas (See Appendix 5.4).
>
> That the University maximize the use of current facilities and ensure maximum communication and interaction between facilities.
>
> That it be ensured that this interaction is achieved with minimum impact to City-wide and neighborhood pedestrian and traffic links.
>
> That the Master Plan address the extent and type of expansion that the University will undergo in a logical and predictable manner while at the same time being flexible enough to respond to needs of both the University and its neighbors as they may change over the next twenty years.
>
> That the Master Plan maintains and enhances the quality of life and activity on the public streets and open spaces that are part of both the campus and the community.
>
> That the Master Plan minimize disruption to the area caused by traffic and service vehicles by the rational and judicious location of parking and loading entrances.
>
> That the Master Plan establish urban design guidelines for the actual development of the buildings in order to promote community uses and retail activity at ground level as well as to locate building entrances to ensure a legible and safe pedestrian environment.

In order to ensure the integration of the Health Sciences Master Plan into the neighborhood and City-wide context a number of guidelines were derived from previous planning studies and the current Midtown Cultural District Plan as well as the Chinatown Community Plan.

The guidelines cover a range of dimensions, the two most important of which are land use and circulation. The character of the urban realm including open space and how it related to pedestrian circulation and building entrances was also given a high priority. Finally, building heights and massing as part of the guidelines for the urban design component, were developed.

Land Use. The Master Plan envisions that, wherever practical, those areas that have a public component will be located at street level, while research functions will be located on upper floors. Furthermore, the intent is to locate institutional uses as close as possible to Kneeland and Harvard Street, while locating those functions and land uses that are community-oriented towards the southern end of the plan area. The massing for the Master Plan should also reflect this concept with the taller buildings along Kneeland Street.

Pedestrian Circulation. Harrison Avenue and Tyler Street are seen as the main north/south pedestrian routes with Harrison Avenue being more active with a mix of commercial and institutional uses while Tyler Street is more residential and community-oriented in nature. East/west pedestrian circulation follows two routes: the already established institutional Harvard Street axis and the need to establish an additional east/west pedestrian link either through the Posner lot or along Oak Street.

Vehicular Circulation. No change to the existing traffic circulation is proposed, however, the importance of Kneeland Street and Harrison Avenue as major arterial routes within the City should be recognized.

Open Space. Lighting and the character and quality of the open space of the Health Sciences Campus should be addressed by ensuring that the view corridors of Harrison Avenue and Harvard Street are maintained. Pedestrian bridges should frame and accentuate view corridors rather than obstructing them. Building design and massing should respect these view corridors and also respond to the major pedestrian pathways, creating a sense of orientation through the use of open space and view corridors.

The Health Science Campus area as well as the surrounding development is reasonably dense. Small, manageable open spaces should be created wherever possible as part of the proposed pedestrian network.

Urban Design: Parcel Size and Through-Block connections. One of the major criticisms of urban institutional development is that it usually destroys the scale of the existing surroundings. The Master Plan for the Health Science Campus should not disrupt the scale of the South Cove and Chinatown. Where appropriate, through-block connections should be reintroduced to ensure that the scale of the area is maintained.

Urban Design: Public Realm Activities. The Master Plan should encourage an active and safe public realm by locating retail and community uses at street level. Building entrances and the pedestrian network should be organized to reinforce the level of activity on the street.

4.2 Existing Land and Space

Land

The University currently owns a total of 101,917 sf of land within the Master Plan area, in four parcels bounded by Kneeland and Oak Streets on the north and south and by Harrison Avenue on the west and Tyler Street on the east. This land is outlined in Figure 2.

The 101,917 sf is divided into four parcels as follows:

M and V block	39,900 sf
North Posner	10,945 sf
Mid Posner	24,950 sf
Posner Hall Parcel	26,122 sf
Existing Ownership	101,917 sf

Tufts also owns the land on which the Sackler Center, the Dental School Building and 193 and 203 Harrison Avenue sit. These buildings are outside of the area of the Master Plan, so their square footage is not included here.

Space

The following is a brief description of all the facilities located on the Tufts Health Sciences Boston Campus. The description includes ages, construction, architect, planning principles, where relevant, and use of each building. A detailed floor by floor breakdown of uses for each of the buildings (Fig. 3) can be used to supplement the more general use descriptions identified here.

The USDA Center for the Study of Aging (the Nutrition Building) is not included in the following descriptions since this building is not a Tufts owned facility.

M & V Complex

The M &V Complex is the name ascribed to the four loft style buildings bounded by Kneeland, Harrison, Harvard and Tyler Streets. The complex is the laboratory building--both teaching and research--for the Medical and Veterinary Schools.

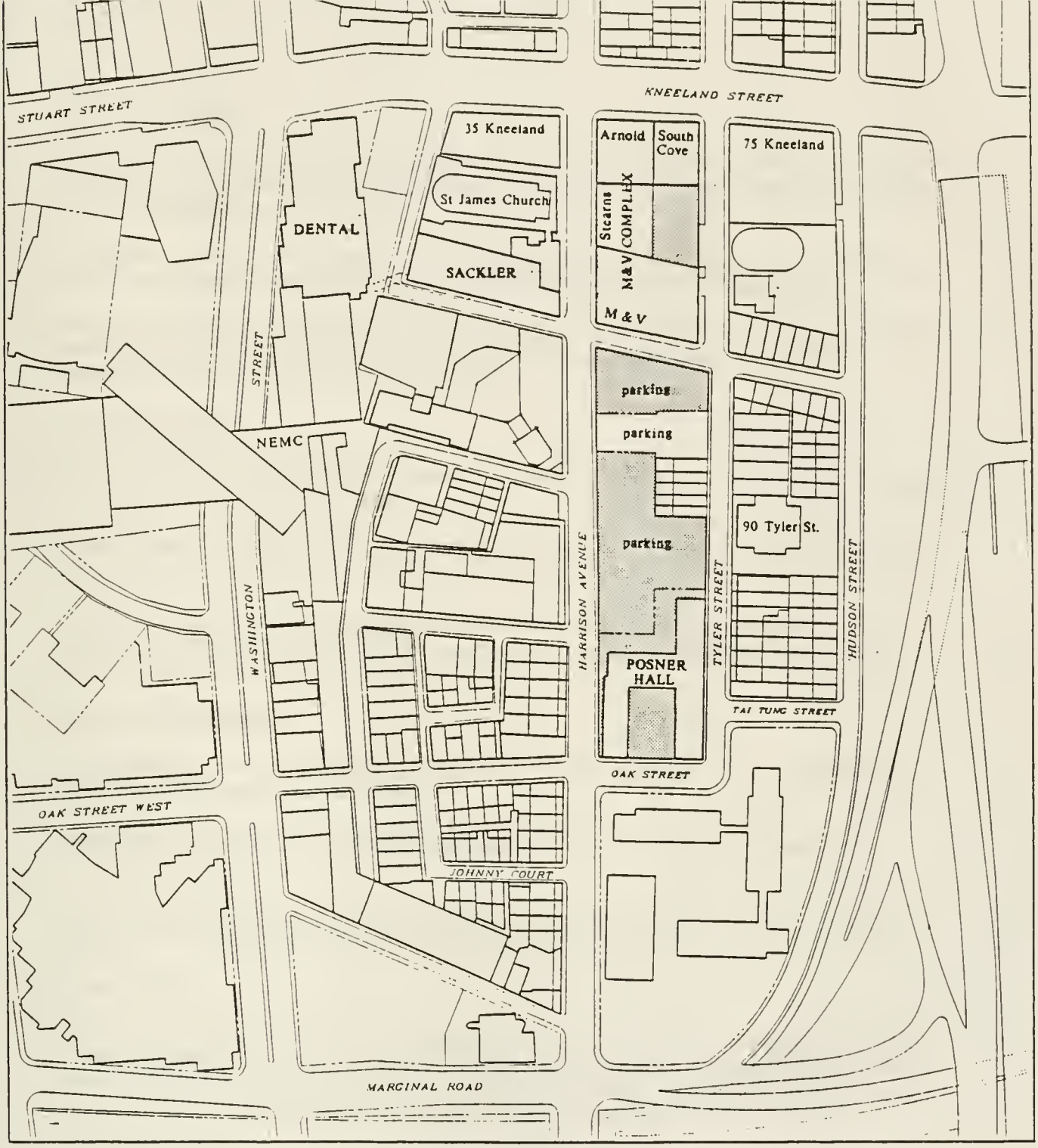
The individual buildings of the M&V complex are:

M&V Building

The building was purchased in 1945. It is of fireproof reinforced concrete construction and has a red brick veneer. The building was originally five floors and a full basement. At some time before the Tufts purchase, three additional floors were added.

The building is fully sprinklered and has two elevators. Heating steam and "process" steam for research are purchased from Boston Edison Company. Air conditioning is accomplished by a number of central systems and auxiliary window units.

The building is 126,000 gsf and is entirely used for research.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

EXISTING HEALTH SCIENCE CAMPUS

Figure 2.

Jung/Brannen Associates, Inc.
Architects and Planners

KEY

Tufts Buildings

Tufts Owned Undeveloped Land

N

Boston, Massachusetts.

26 December 1991.

Stearns Building

The building was purchased and renovated in 1959. It is of fireproof reinforced concrete construction. The building is eight stories plus a basement level for shipping/receiving and mechanical equipment.

Steam is purchased from Boston Edison company for heating and research. The building has one central air conditioning system; and one passenger and one freight elevator.

Each floor is 6,275 gsf for a total of 56,475 gsf. The first floor is used for classrooms; the fourth floor houses research animals and has a small pathological incinerator. The remainder of the building is devoted to research.

Arnold Building

This building is of fireproof reinforced concrete construction and is fully sprinklered. There are eight stories and a full basement.

Steam for heat and research is supplied by Boston Edison. Air conditioning is provided by several central systems which are augmented by window units.

The building contains 57,640 gsf. Part of the first floor is the campus bookstore. Classrooms occupy a portion of the second floor; and animal housing, a portion of the fourth. The remainder of the building is research.

South Cove Building

This building is also of fireproof reinforced concrete construction and is fully sprinklered. It has eight stories and a full basement.

Steam for heat and research is supplied by Boston Edison. Each floor has its own air conditioning system.

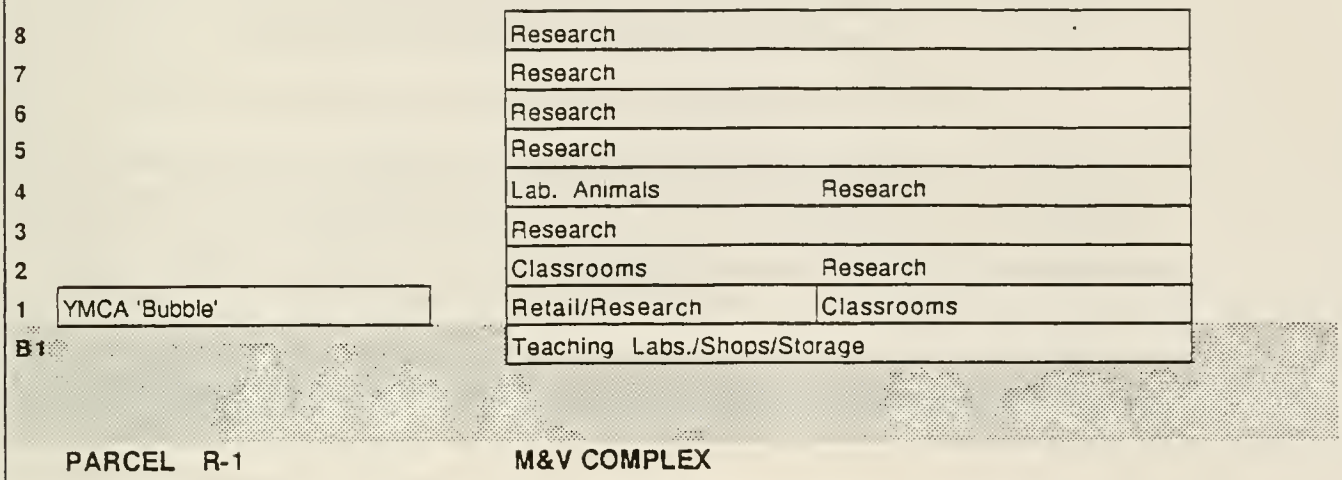
Each floor is 5,066 gsf for a total of 45,590 gsf. The second floor is used for teaching laboratories. The remainder of the building is devoted to research.

Dental Building

The Dental Building is a nine story building, constructed in 1972. The architects were the Architects Collaborative of Cambridge. The building was designed together with NEMC's Proger Building to the south and to which it is directly linked. These two buildings were to be the first two components of the T-NEMC Master Plan of the 1960's.

The Dental Building is a steel framed building with external precast concrete cladding. It consists of 147,000 gsf in eight usable floors and a mechanical penthouse floor. The foundations were designed to allow for the construction of additional floors.

Clinics are concentrated in the second to fifth floors; and classrooms, administration and students services distributed in the remaining floors. Currently, half of the fifth and sixth floors are used by NEMC.



DIAGRAMATIC SECTION THRU BUILDINGS ALONG TYLER STREET

DIAGRAMATIC SECTION THRU BUILDINGS ALONG HARRISON AVENUE

TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

SECTIONAL OF EXISTING BUILDINGS

Figure 3.

Anthony Blackett
Consultant Architect/Planner

Boston, Massachusetts.

26 December 1991.

Sackler Center for Health Communications

The Sackler Building consists of eight floors plus a basement. It was designed by the joint venture of Shepley Bulfinch Richardson Abbott and John Carl Warnecke Associates and completed in 1985. The building is linked by a pedestrian bridge to the Dental building at the fourth level and the design allows for the extension of this high level pedestrian network to the Medical School buildings across Harrison Avenue.

The building is steel frame with brick veneer. Its floor area is 129,000 gsf.

The predominant use of Sackler is the accommodation of the University's Health Science Learning Resource Center which occupies floors four through seven. The Learning Resource Center is especially noteworthy for its telecommunication equipment which allows electronic access to medical information and data bases, as well as communication between all three Tufts campuses and teleconferencing.

The top floor includes the Medical and Sackler Schools' administration and food services. The lower three floors and basement house classrooms, auditorium, student services and Educational media.

193/203 Harrison Avenue

These two buildings are two pairs of nineteenth century brick townhouses, which together total 16,000 gsf. The two pairs are separated from each other by a townhouse owned by the BRA and used by Boston Youth Essential Services. The buildings were acquired by the University from T-NEMC in 1990. The houses have been substantially renovated into office suites. Each pair acts as one building. Horizontal circulation is completely integrated between each building of each pair.

Each pair consists of four floors, but floors three and four of 193 are uninhabitable and are thus unoccupied.

193 accommodates T-NEMC Health Services, the Tufts President/Provost Office and the offices of TUDC, Inc.; and 203 holds Tufts' Communications Department, Division of Laboratory Animal Medicine's Administration, the Tufts Diet and Nutrition Letter, the Nutrition Clinic and the School of Veterinary Medicine's Student Affairs Office and Boston campus administrative offices.

Posner Hall

Posner Hall was constructed as the Medical School's dormitory facility in 1954. It is a four story building laid out on an 'H' plan with two separate wings, one fronting Harrison Avenue and the other running parallel to Tyler Street. The wings are joined by a two story connector. There is also a basement which looks out into a landscaped interior court. The total area is 56,000 gsf.

The building is concrete frame with brick veneer. Although the building was originally designed entirely for residential and teaching uses, the Harrison Avenue wing and half of the first floor of the Tyler Street wing have been subsequently converted to office use. These areas accommodate: Physical Plant, Human Resources, Accounting, Materials Management, the Environmental Health and Safety Office and the Center for New Drug Development.

The balance of the Tyler Street wing includes 96 beds which are occupied by students of all three schools, Medical, Dental and Veterinary. In the basement are dormitory support and some seminar rooms.

The two floor connector between the two wings houses an auditorium at the lower level and a multi-purpose function room at the upper.

Rented Space

The fifteenth floor of 75 Kneeland Street (the Hudson Building). The floor is 15,000 gsf and accommodates research and administrative offices for Continuing Education/International Affairs.

Also the eleventh floor of 35 Kneeland is rented from NEMC. This floor is 9,500 gsf and the Department of Community Health and the Development Office are located there.

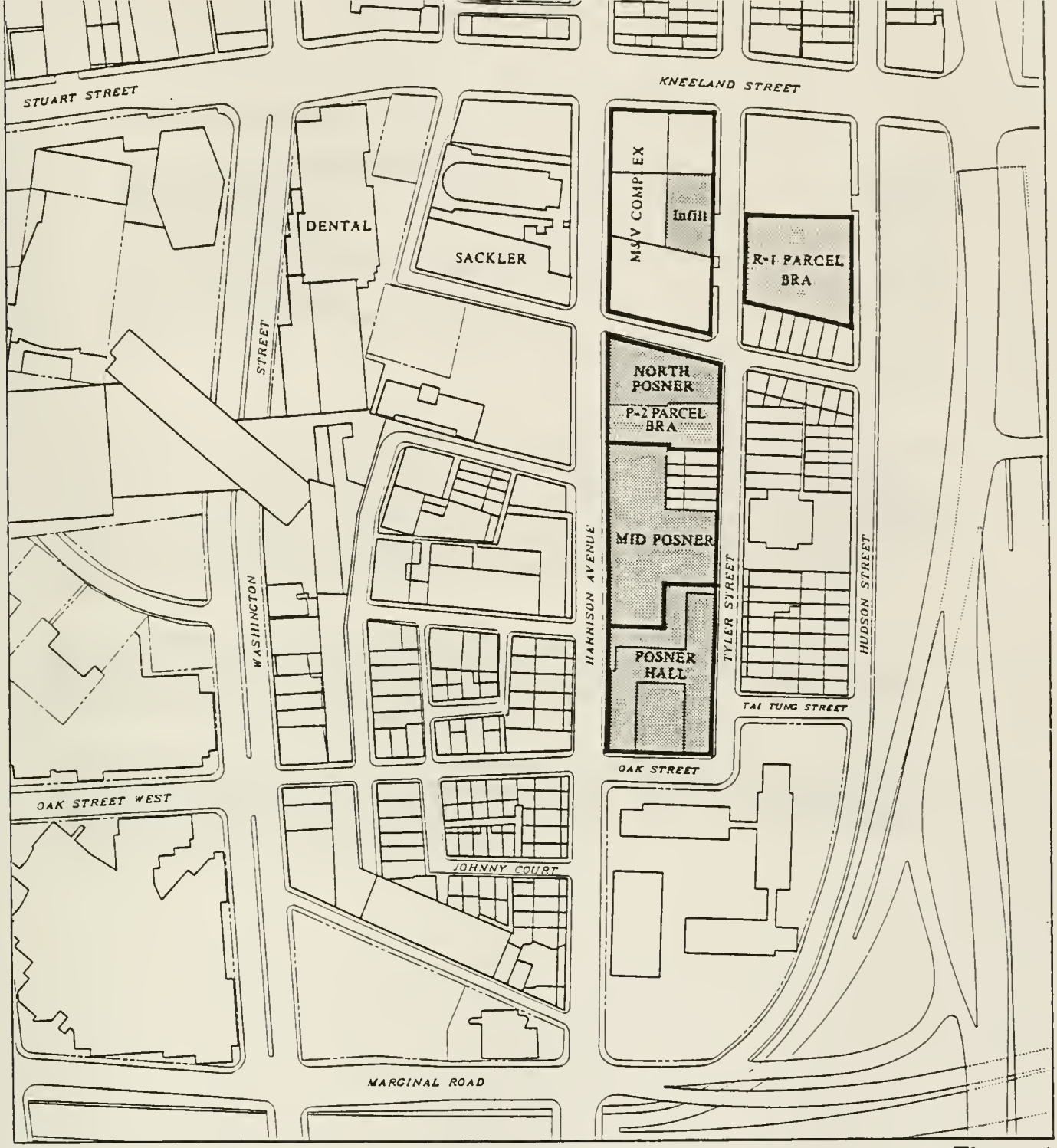
4.3 The Health Sciences Campus Space Program

This section includes the space program for a twenty year build-out of the Tufts Boston Health Sciences campus. The largest component (72% of the total) is additional research space. The balance of the program is the space necessary to support the increase in research, some supplementary teaching areas, community components, and replacement area for currently used space that will be lost. This space program includes the relocation of the School of Nutrition from the Medford campus to the Boston campus where it can complement existing programs at the USDA Health Nutrition Research Center and medical and dental schools. Figure 4 shows the land parcels that comprise the proposed Master Plan.

The driving force behind the program is the need for increased research space. About 40% of the new space will bring existing laboratories, that are significantly below national standards, up to the National Institute of Health (NIH) research space standard. This represents no increase in personnel. The balance of the research space is that required by the increase in research faculty and support staff to provide a full complement of researchers for each department.

The program as stated here is wholly realistic and represents the space necessary to meet the reputation, obligations and potential of Tufts University's Health Science Schools. A detailed analysis and rationale for the space program is included in the Appendix to this report. Shown here is the program summary:

Tufts Program	Existing Space on Boston Campus (GSF)	Proposed Additional Space (GSF)
Research	212,000	491,000
Teaching (Classrooms)	91,000	14,000
Library	65,000	0
Support (Admin./Student Services)	152,000	33,000
Clinical Space	49,000	0
Nutrition School	0	48,000
Tufts Daycare	0	5,000
Retail (leased to community)	0	6,000
Replacement Administration	0	50,000
Other (dorm, dining, service, etc.)	89,000	0
10% Growth Allowance over 20 year Plan Life		65,000
Total	658,000	712,000



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

Figure 4.

LAND PARCELS

Jung/Brannen Associates, Inc.
Architects and Planners

KEY

Parcel Boundaries

N

Boston, Massachusetts.

22 September 1991.

Community Program

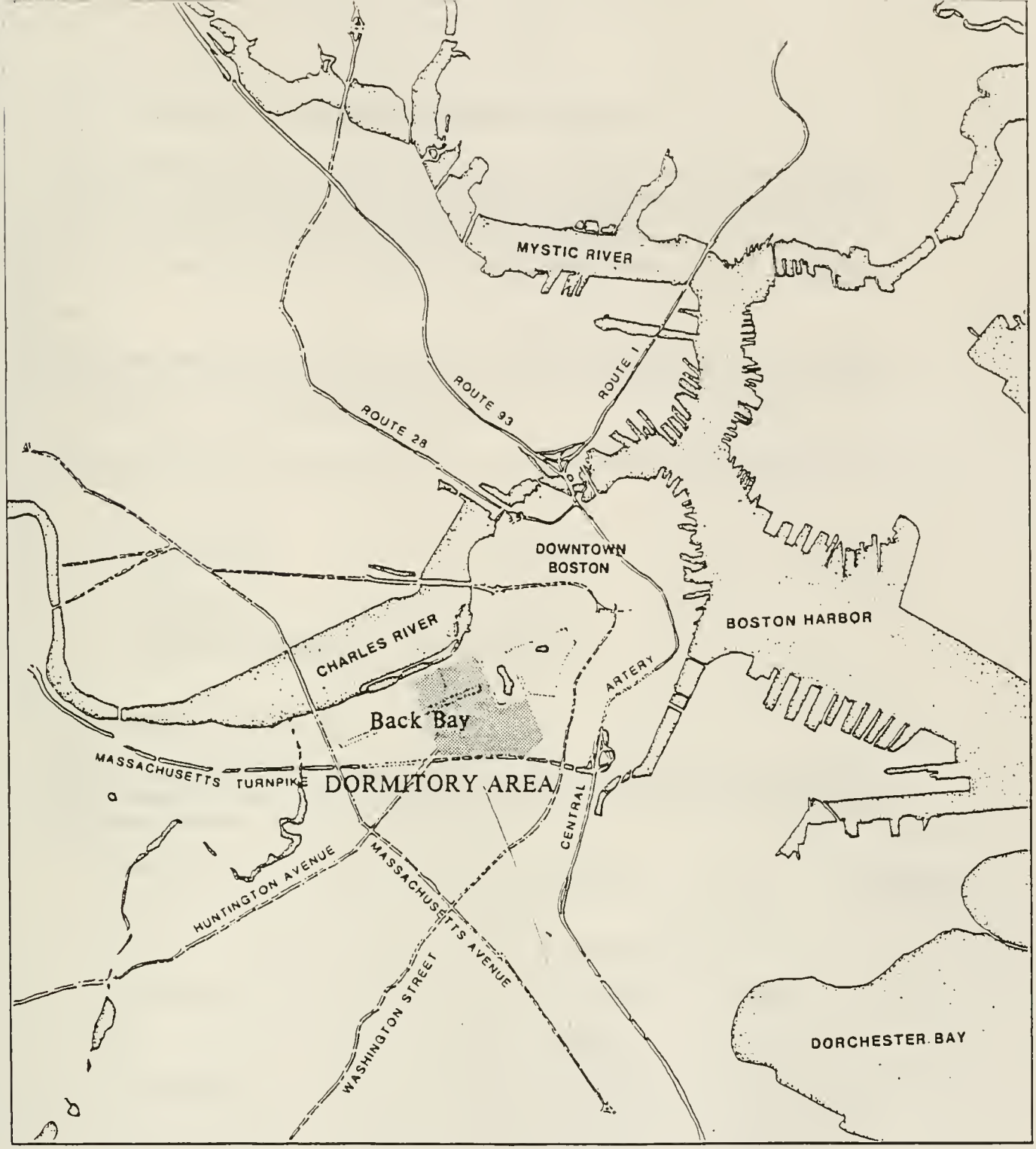
YMCA Gym (to be built on Tufts' land)	7,000
Balance of YMCA	13,000
Community Day Care	3,000
Community Offices	7,000
123 SRO units (Single Room Occupancy)	33,000
SRO Administration	1,000
Community Meeting Rooms (shared with Tufts)	6,000
	70,000

In addition, there will be a need for 200 beds of housing, inclusive of the 97 beds lost from Posner Hall. This represents a doubling of the present student bed capacity. At 300 gsf per bed, the total housing area required would be 60,000 gsf. A survey of medical, dental and Sackler School students recently conducted by the Dean's office, indicated that student would would prefer to be located outside the Institutional Master Plan area; in the South Cove or Back Bay area, within a five to ten minute walking distance from the Health Sciences complex (Figure 5).

It is the University's hope to lease housing for September, 1992 in order to test its desirability, management, etc., and to eventually purchase adequate housing in the desired area. The area under consideration is the Back Bay between Arlington and Exeter Streets and the South Cove area west of New Charles Street.

new

After the 20-year life of this plan, there will be a need for further growth, which could be accommodated by an additional 2-4 floors on top of the Dental Building. Expanding the Dental Building was allowed for in the original Urban Renewal Plan and Tufts wishes to preserve this option for its long-term growth.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

DORMITORY RELOCATION AREA

Figure 5.

Jung/Brannen Associates, Inc.
Architects and Planners

area more clearly defined

N

Boston, Massachusetts.

26 December 1991.

4.4 Health Sciences Master Plan

The Health Sciences Master Plan envisions three new buildings and the renovation and expansion of the M & V Complex to be constructed over a period of approximately ten to twenty years. The plan also proposes to locate new University functions away from the core of the residential area and to introduce community uses as part of institutional buildings, particularly at street level and along pedestrian pathways. (See Figure 6.)

Land

The Master Plan recommends the exchange of the Posner parcel and building for a BRA-owned sliver of land between North and Mid Posner of 7,557 sf and the parcel known as R-1 adjacent to 75 Kneeland Street of 19,331 sf.

The completed Master Plan area, therefore, consists of a total of 102,672 sf made up of the following land parcels:

M and V block	39,900 sf
North Posner	10,945 sf
Parcel P-2 (BRA)	7,557 sf
Mid Posner	24,950 sf
Parcel R-1	19,331 sf
Master Plan Ownership	102,672 sf

FAR, Height and Parking

In order to accommodate the Health Science program in as compact a manner as possible and to contain development geographically as much as possible, the following FAR and Heights are proposed:

PARCEL	FAR	HEIGHT	GSF	PARKING SPACES
Infill	8	125 feet	37,000	0
Mid Posner	6	125 feet	150,000	85
R-1	14	200 feet	271,000	91
North Posner	8	125 feet	148,000	87
M & V Complex	11	170 feet	120,000[9]	0
		FAR TOTAL	726,000 GSF	263

[9] Represents increase of 3 floors to the existing 8 floors (FAR of 8).

TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

PROPOSED HEALTH SCIENCE CAMPUS

Figure 6.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

26 December 1991.

The previous sub-section identified the actual space program needs as 719,000 gsf (712,000 gsf of Tufts space plus the 7,000 gsf for the portion of the YMCA to be built on Tufts land). The 726,000 gsf represents the minimum FAR envelope that can accommodate the 719,000 gsf program.

The parking spaces shown here are to be constructed in two levels beneath the respective buildings.

Massing

The massing of the Master Plan proposes to concentrate development along the Kneeland Street corridor in keeping with the massing of existing buildings along that corridor. The massing proposed is within the streetwall guidelines proposed for Chinatown with the exception of the M & V Complex and the R-1 parcel which are, however, compatible to the massing of adjacent development, all of which are full coverage developments.

Building Use

A floor by floor diagram showing the use of each building is shown in Fig. 7.

The first three floors of the R-1, M & V Complex and North Posner include the service elements such as classrooms and administration and those uses which will have greatest use by the public and Tufts students. The remaining floors in each building are devoted to research.

The first four floors of the Mid Posner building are the proposed School of Nutrition, and the balance of the floors are research, again reflecting the more heavily used School of Nutrition on the accessible floors.

The community/public elements such as recreation, daycare and community offices are located in the basement and first floor of Posner. The more private SRO's are accommodated on the upper floors.

And, finally, two levels of parking are shown in the basements of all new buildings. Any additional underground levels would be prohibitively costly.

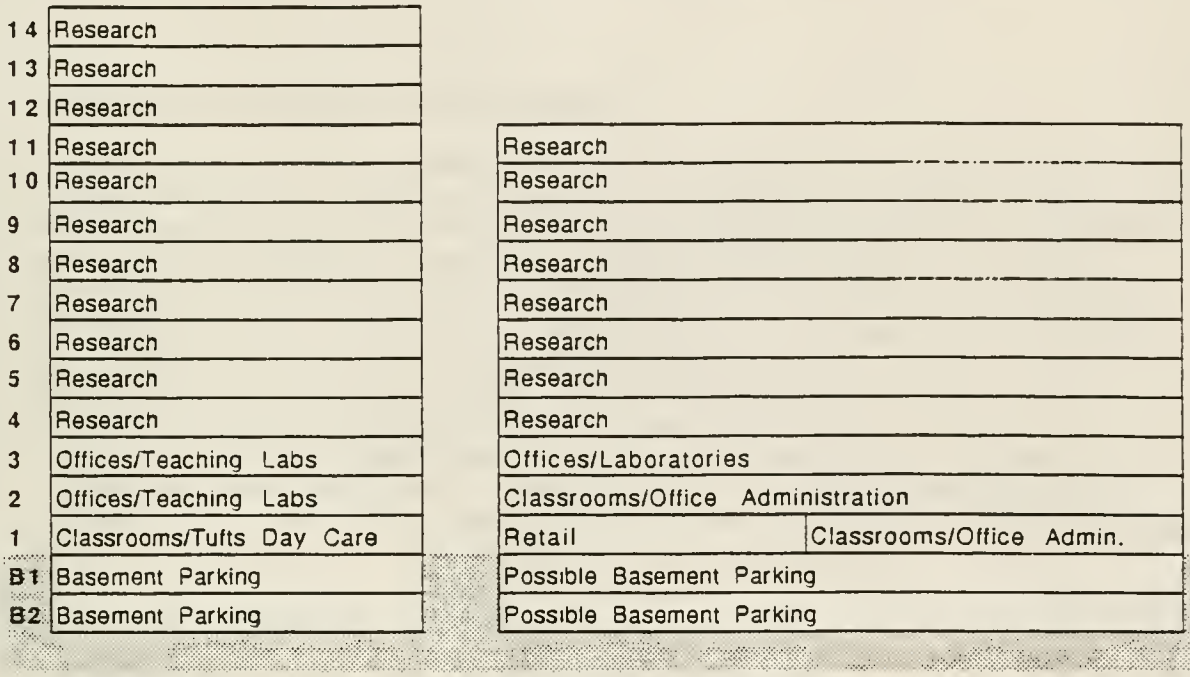
Functional Connections

Three pedestrian bridges are proposed at the third floor or above to connect existing research buildings together as well as to connect new development. These enclosed connections allow for people as well as research materials and equipment to move easily throughout the campus without disrupting the more public functions of the University and the life of the neighborhood.

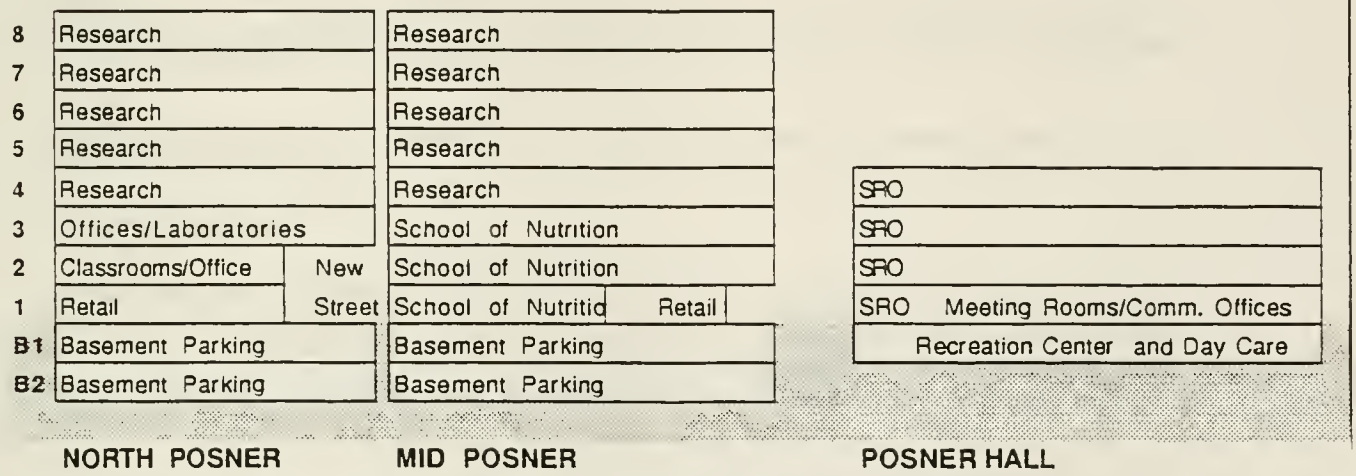
Street Activity and Building Entrances

An important consideration in the campus plan is the location of building entrances to reinforce the pedestrian network and to contribute to the quality of the street activity and safety. Entrances are proposed at mid block as well as at important street corners.

Community and retail uses on the first floor are proposed along Kneeland and Harrison Avenue to further develop this theme. (See Fig. 8).



DIAGRAMATIC SECTION THRU BUILDINGS ALONG TYLER STREET



DIAGRAMATIC SECTION THRU BUILDINGS ALONG HARRISON AVENUE

TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

BUILDING SECTIONS

Figure 7.

Jung/Brannen Associates, Inc.
Architects and Planners

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Boston, Massachusetts.

26 December 1991.

Pedestrian Circulation and Open Space.

Harrison Avenue and Tyler Street are the two north/south corridors and landscape improvements are proposed that will give these pedestrian routes the visual prominence that their use suggests. Harvard Street is the institutional east/west axis and a new east/west pedestrian link mid-block between Harvard and Oak Street is proposed. This new pedestrian route will link 90 Tyler Street, home of C.C.B.A. and C.A.C.A. as well as other important community functions to Nassau Street. Tufts proposes to relocate the Y.M.C.A. on mid-Posner so that it, as well as a small park, other community uses including day care, housing and retail are situated along this new east/west connector. This east/west connection is a significant pedestrian improvement in the neighborhood and creates a new community/pedestrian spine that connects Hudson Street through to Washington Street (via the proposed NEMC 1-C development). Another green space is proposed for the courtyard at the southern end of Posner Hall along Oak Street. This could be a park or the play area for a day care center (see Figs. 8 and 9).

Vehicular Circulation

No change in the existing street circulation pattern is proposed.

Two new loading areas are proposed. One on Hudson Street will serve the proposed building on parcel R-1 and one on Tyler Street will serve the mid and north Posner buildings. The existing loading area for the M & V Complex is planned to be enclosed as part of the Infill project, but will remain at its current location off Tyler Street.

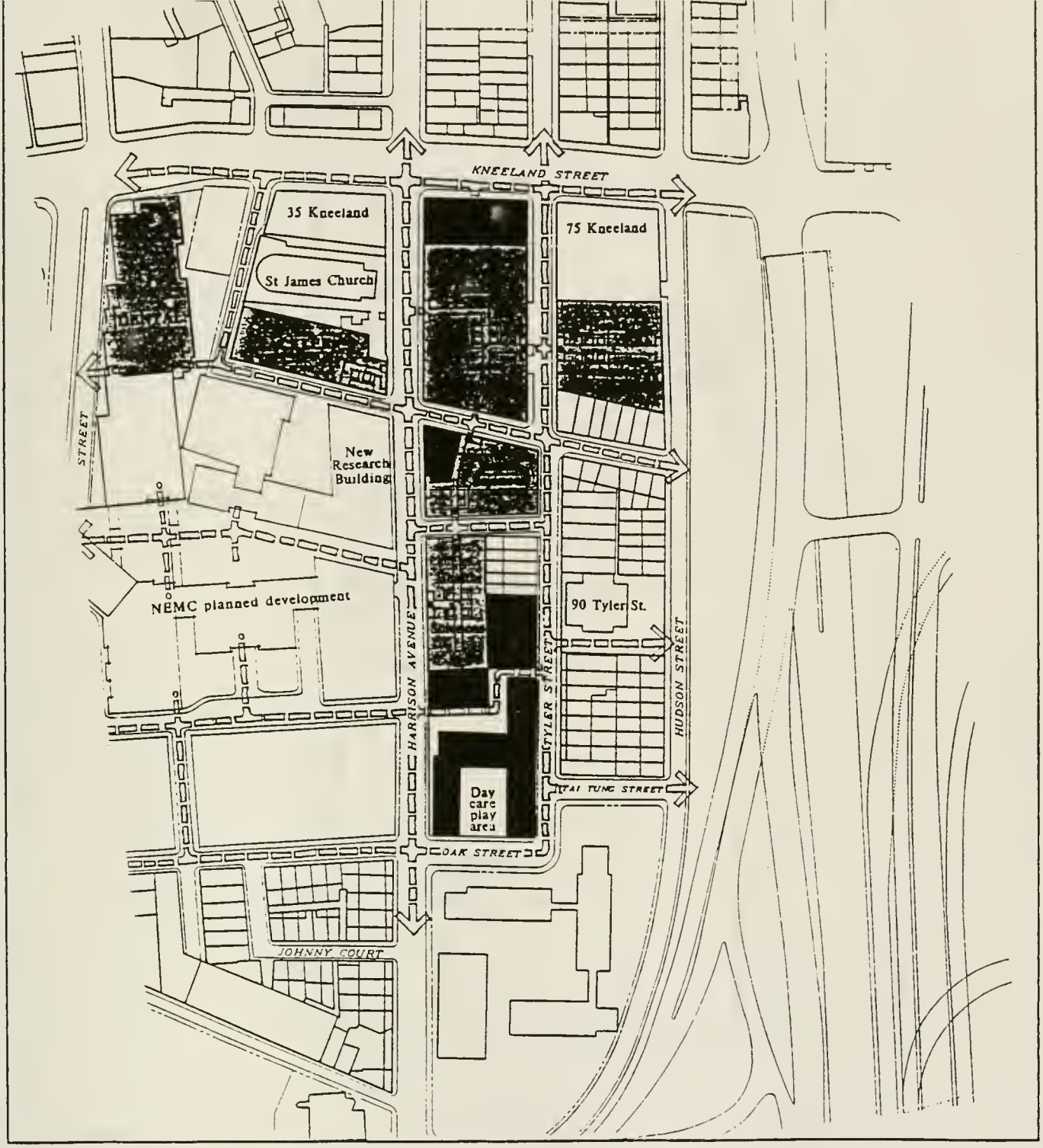
The Tyler Street loading area will incorporate an alley that passes through from Tyler Street to Harrison Avenue. This will minimize backing into a public street and provides another mid-block connection within the Posner block.

Parking will be outside the planning area in facilities operated in conjunction with the New England Medical Center.

Community Uses

A significant range of community uses are proposed in the Master Plan. Most importantly, Posner Hall is recommended for renovation and development into a daycare facility in the west wing, community offices and a 123 single room occupancy residential units in both the east and west wings; and space, shared with Tufts, for two large community group meeting rooms in the connecting building section between the two wings.

Tufts proposes that the Y.M.C.A. be relocated from the Tyler Street bubble into a space for an expanded range of recreational activities in the lower floor of the mid-Posner building and basement and first floor areas of Posner Hall. The entrances to these spaces would be along the new pedestrian pathway connecting Tyler Street and Harrison Avenue.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

PEDESTRIAN CIRCULATION and FIRST FLOOR USES

Figure 8.

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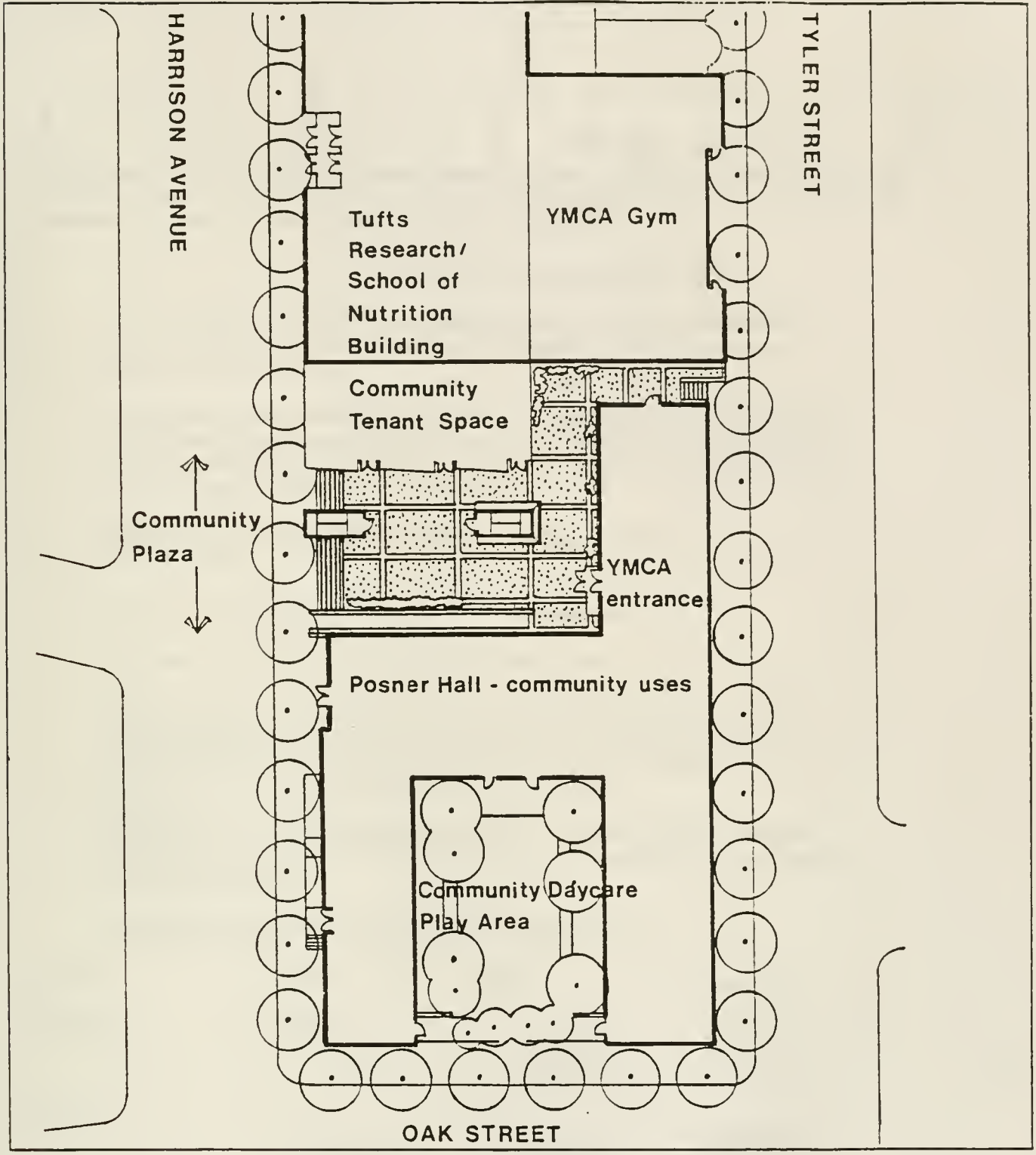
Jung/Brannen Associates, Inc.
Architects and Planners

will be color

Boston. Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

OPEN SPACE

Figure 9.

Anthony Blackett
Consultant Architect/Planner

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Somerville, Massachusetts.

26 December 1991.

Phase I includes the construction of 2 Buildings on the southern portion of the site

4.5 Phasing

The Master Plan for the Health Sciences Campus is planned to take the institution well into the 21st century and as such will be a guide to development for the next twenty years. The phasing of the plan has three stages and is shown in Fig. 9.

Phase One is based on the next five years and incorporates building:

1) The "Infill" (37,000 sf) to the existing M & V Complex which would provide some more research space and rationalize the existing disparate systems of the complex.

2) The Mid Posner building (150,000 gsf) of which approximately 50,000 gsf will be the proposed School of Nutrition and the balance would be half of the space that could be immediately absorbed by the research faculty on campus to satisfy existing space shortfalls.

Phase Two is envisioned as occurring within the next ten to fifteen years and consists of:

1) A new building on the R-1 parcel (271,000 gsf) and

2) A new building on the North Posner parcel (148,000 gsf).

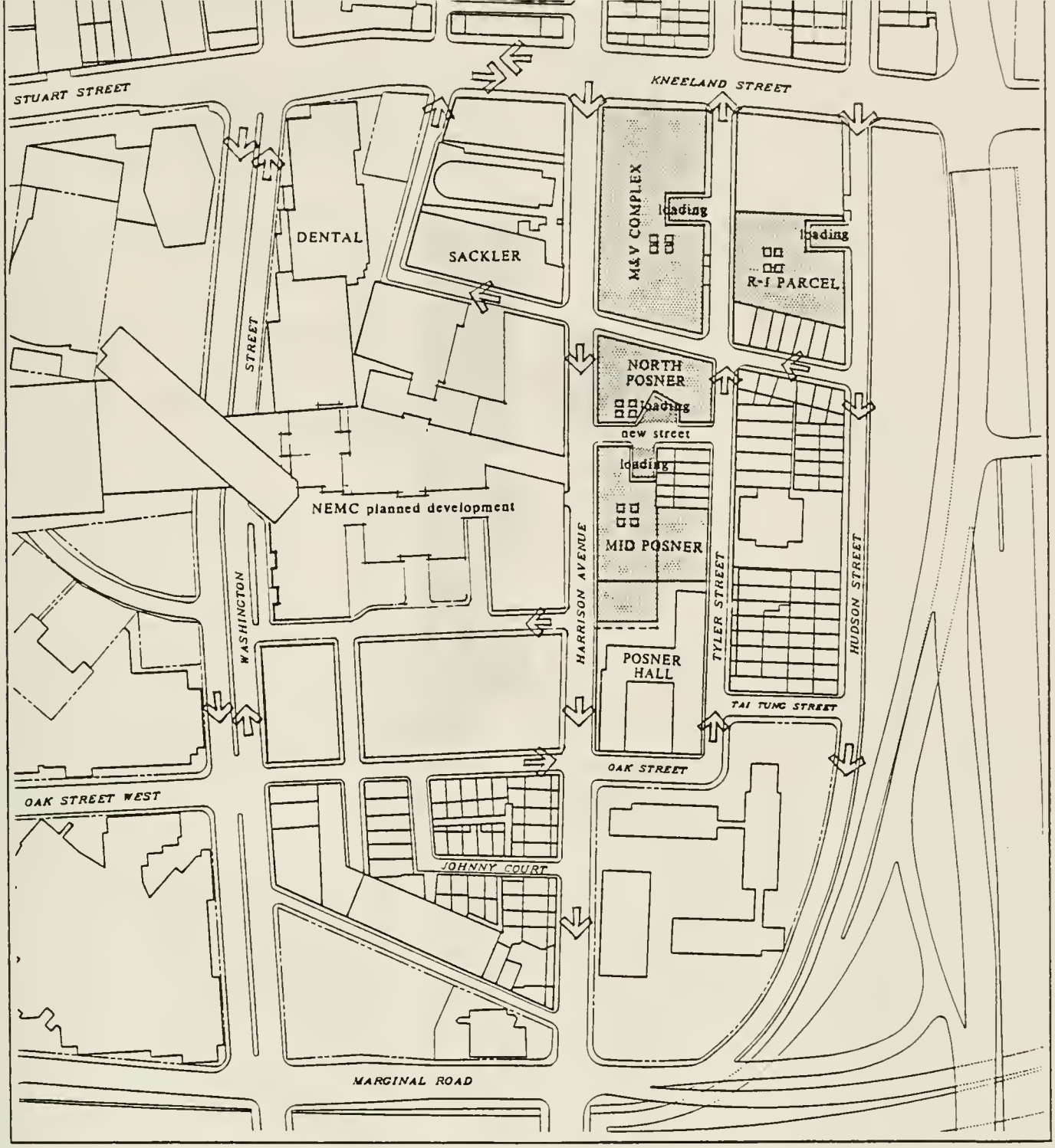
These developments will absorb the remaining 100,000 gsf of research space needed to satisfy existing shortfalls, 280,000 gsf of the research space needed for new research faculty and their funded projects, administration and classroom space, and retail space.

Phase Three is the development of the M & V Complex to its full program (120,000 gsf) and will satisfy the balance of needed research and associated space in the program.

This phasing plan is summarized in the following table:

Phase	Parcel	GSF	Timetable
Phase 1	Infill	37,000	1992-1997
	Mid-Posner	150,000	1992-1997
		187,000	
Phase 2	R-1	271,000	2002-2007
	North Posner	198,000	2002-2007
		419,000	
Phase 3	M&V Complex	113,000	2007-2012

new



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

VEHICULAR CIRCULATION and LOADING AREAS

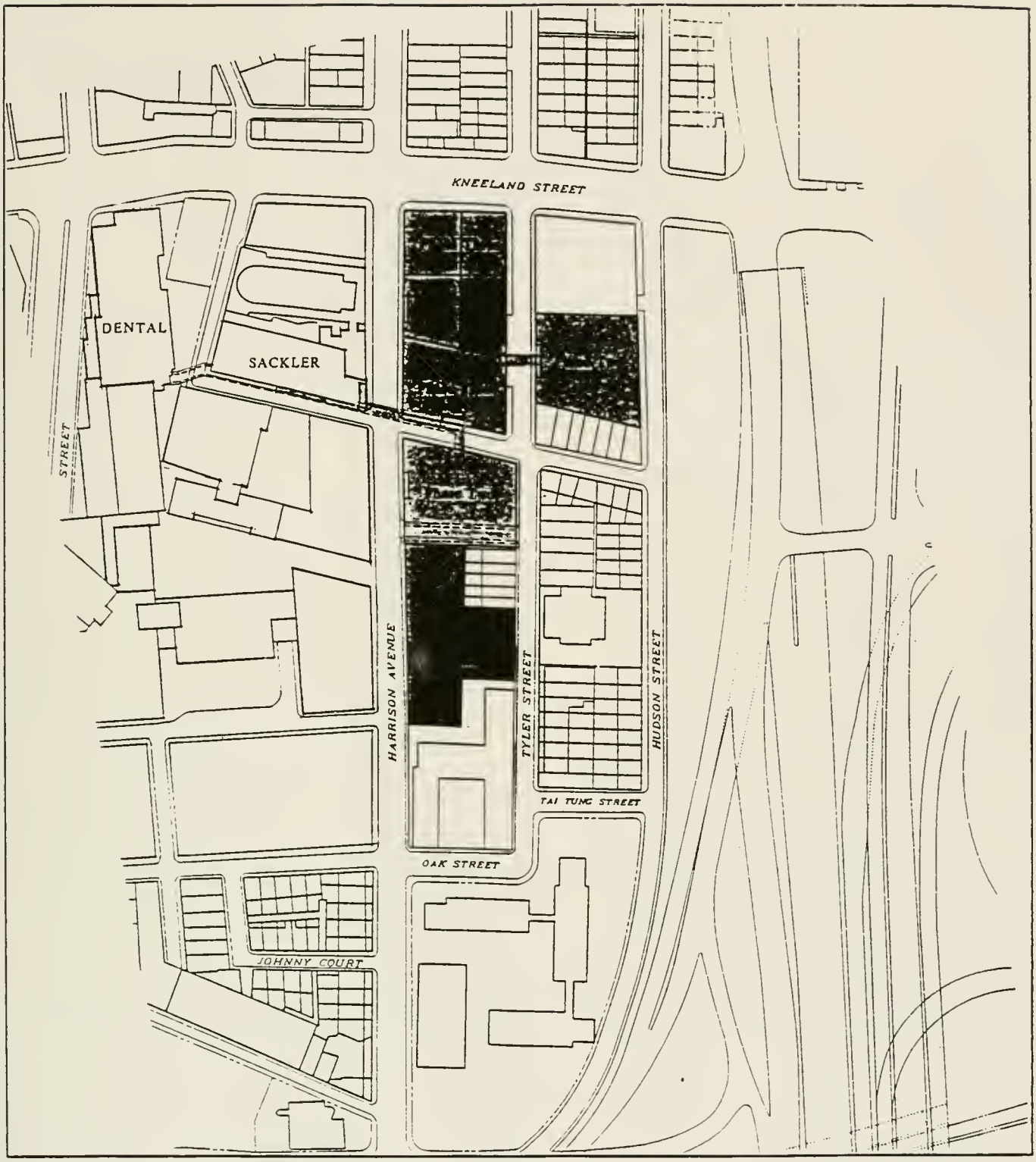
Figure 10.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

PHASING

Figure 11.

Jung/Brannen Associates, Inc.
Architects and Planners

will be color

N

Boston, Massachusetts.

22 September 1991.

4.6 Traffic and Parking

4.7 Alternative Development Scenarios

While consideration has been given to other location, the teaching and research program that is the core of medical and dental education requires contiguous facilities. In light of this critical requirement, and the fact that the Chinatown Community Plan states that institutional expansion should remain separated from the residential community, Tufts has planned its new space to abut existing facilities. The maximum height and massing would be on Harrison Avenue adjacent to New England Medical Center and Kneeland Street.

Tufts Medical School, as its history shows, moved around the City of Boston in search of space where its program could operate effectively and grow for a number of years until it moved to the South Cove to affiliate with New England Medical Center. Having now been in Chinatown since 1948, Tufts has been given indications over the years that institutional expansion in this area would be allowed and even encouraged. Tufts has long planned to develop its Health Science campus here.

A successful medical school with a strong research program will spin off independent research activities. Tufts will direct such activity to the South Station where Tufts University Development Corporation (TUDC) will provide space for all development activities which are not related to the central mission of the Health Science Schools. The program TUDC has presented for South Station includes 100,000 sf of research laboratory facilities for Tufts. This research will focus on "contract" research and funded research which is more autonomous than the traditional medical school sponsored research and can be physically separated from the Health Science campus without hindering the educational program at Tufts or inhibiting the research itself.

tone change

Tufts will build those facilities which are central to the educational mission of the health science schools contiguous to existing facilities, where the distance between one building and another allows for movement back and forth between classes.

The South Station development will provide relief from space demands of the growing biomedical research activity that is now an almost inevitable feature of any successful research oriented medical school. New space on Harrison Avenue and Tyler Street will provide the 719,000 gsf needed on the campus itself to provide for the space needs of teaching and its companion basic research.

New teaching and research space, as described, and the South Station development, enable the university to release Posner Hall and to accommodate urban design elements and restrict the vertical height of buildings.

5. COMMUNITY BENEFITS

5.1 What Will Chinatown Be Like in the Future

If one could see the Chinatown area twenty years from now, one would see the completed Tufts Master Plan as well as other developments in the South Cove, Mid-Town, Chinatown area. If all of these plans reach fruition, the area will enjoy significant development, new jobs and the benefits of linkage from those developments. Indeed, with the possibilities presented by proposed air rights projects, the shape and size of Chinatown may be substantially changed and enlarged.

If one focuses in on the Tufts "campus area," the buildings and improvements proposed in this Master Plan will add to the University's space, while creating a pleasant, accessible, improved street environment in the area. In fact, the Tufts Master Plan will address some of the issues of most importance to the Chinatown community: the plan will provide new housing for the community in Posner Hall; the plan will create a new YMCA; the plan will create some new open space; and the plan will create new jobs.

Along Harrison Avenue, where the largest concentration of University facilities is currently found, new buildings will rise on the existing parking lot. On the north Posner location, an eight story building will provide expanded research space for Tufts Medical School. While a bridge will connect the new building to M & V, vehicular and pedestrian access will continue along Harvard Street, where new lighting and plantings will improve a street that is now dingy and drab. An eight story building will stand on mid Posner, housing additional health science offices and laboratories, which may include the University's School of Nutrition. Along Harrison Avenue, both of these new buildings will have some street level retail space occupied by Asian businesses. Continuing along Harrison Avenue, one will find a landscaped plaza between the new building and Posner Hall. The plaza will be part of a pedestrian way connecting Tyler Street and Harrison Avenue.

While Posner Hall will remain largely as it is on the outside, additional landscaping improvements will brighten the front of the building. The entrance to the housing units in Posner Hall, as well as the entrance to other community spaces in the building, will also be along Harrison Avenue. Adjacent retail space will create a cluster of community uses at this end of Harrison.

University properties along the west side of Harrison Avenue will remain largely unchanged. The New England Medical Center's Master Plan calls for replacing the emergency room facility now on Harrison Avenue with administration and research buildings.

Turning east on Oak Street, one would find a landscaped area between the two wings of Posner Hall that could be the play area for a day care center. Its landscaped greenery will add to this already dense area. Along Tyler street, at the end of Posner Hall, another landscaped area, the Tyler Street end of the pedestrian way, forms an entry that leads to the YMCA's facilities. New landscaping brightens the streetscape along this stretch of Tyler. The existing, non-University owned buildings remain.

One next encounters the Tyler Street side of the north Posner building. Crossing Harvard Street, the filled-in back of M & V and the new 12 story R-1 building which rises to meet the structure currently at 75 Kneeland Street complete the University's research and teaching

facilities. M & V and this building will be joined by a pedestrian bridge linking laboratories and academic departments as well.

While some parking will be built beneath the R-1 and Posner lot buildings, the majority of off-street parking in the area will be relocated to an off-campus location. This, along with the relocation of NEMC's emergency room, will cut back the amount of traffic generated by these institutional uses circulating in the Harrison-Oak-Tyler Street area.

While the new buildings Tufts proposes will make the area more densely built, the structures will be designed to be sensitive to the surrounding area in terms of aesthetics, shadow and the pedestrian environment. Maintenance and enhancement of existing pedestrian ways, along with the creation of a new link between Tyler Street and Harrison Avenue should serve to increase the ease and comfort of people walking in and through the area. The new retail space on the street level of the Posner lot buildings will invite increased pedestrian traffic and business into a part of Chinatown where there currently is little of that, and this new business area will act as a commercial link between the stores in Tai Tung Village and the main business area on the north side of Kneeland Street. These additions should be significant assets to the community.

In addition, the construction of athletic and program space in the mid Posner building and Posner Hall will give the community greatly enhanced recreational space, some new space for community agencies and their programs, as well as single room housing that is badly needed in the area. The completion of the University's Master Plan, in and of itself, in making an impact on the community, brings benefits to Chinatown as well.

All new

5.2 Benefits to the Community

The Master Plan presented here brings a number of substantial benefits to the City of Boston and the Chinatown community. In addition to the housing and jobs linkage and day care required by Boston zoning, Tufts also proposes to provide space for a new YMCA, for new retail occupancies on first floor levels of new buildings, for single room occupancy housing and other community uses and for the eventual ownership of the entirety of Posner Hall by the community. The implementation of the Master Plan will create a better streetscape, better pedestrian environment and access and new open space. With the Master Plan, the University commits itself to an ongoing program of opening University resources to the Chinatown community and engaging in a program of job and purchasing fairs.

disposition of Posner Hall

With construction of the Mid-Posner Building, Tufts will build 9,800 gsf (7,000 gsf of this space will be on Tufts land, i.e. Mid Posner parcel) of shell space for a new YMCA gymnasium. The YMCA will also have an additional 10,200 gsf for office and program uses in Posner Hall. Posner Hall will also provide 3,000 gsf for community day care, 7,000 gsf for other community offices, 123 units of single occupancy housing and 1,000 gsf of office space for housing administration and 6,000 gsf of meeting room space to be shared with Tufts.

Tufts will create a total of 6,000 gsf of retail space during the entire Master Plan program. The total space committed for community use is therefore 76,000 gsf.

Community Program	Gross Square Feet
YMCA Gym (external to Posner)	9,800 gsf
Retail space (to be leased to community)	6,000 gsf
Balance of YMCA (in Posner)	10,200 gsf
Community Day Care	3,000 gsf
Community Offices	7,000 gsf
123 SRO units (Single Room Occupancy)	33,000 gsf
SRO Administration	1,000 gsf
Community Meeting Rooms (Shared with Tufts)	6,000 gsf
TOTAL COMMUNITY SPACE	76,000 gsf

Donations

Tufts University has a policy of making University facilities and resources available to its host communities. In light of this, Chinatown organizations will be able to use University space, both on the Boston and the Medford/Somerville campuses, for meetings, conferences, etc. Tufts also makes contributions to the community from time to time to help with specific projects and programs. Following are examples that represent the implementation of this policy. Tufts has:

help with specific projects and programs. Following are examples that represent the implementation of this policy. Tufts has:

provided free housing during the summer for Phillips Brooks volunteers who run the Chinatown Adventure Program;

provided weekly meeting space for the Church of All Nations' Sunday School adult classes;

provided meeting space for the Health and Learning, Inc. ESL Program;

donated T-shirts for the Fall 1990 Chinatown Neighborhood Cleanup;

provided support for the job training program run by Chinese Occupational Training Center and Chinese American Civic Association, and has committed to expand its support for a Consortium job training project in Chinatown;

donated used computer equipment and office supplies to the Acorn Day Care Center;

donated books to the Maryknoll Sisters for a tutoring project where Tufts Medical students volunteer;

supported the Sampan by purchasing ads in the New Years and August Moon Festival special editions, as well as regularly advertising job openings there;

continued to work with the Chinese Consolidated Benevolent Association's Scholarship Committee on the award of scholarships to Asian American students who are admitted to Tufts (this program was begun with a $100,000 grant to CCBA by Tufts in 1983);

offered a minority high school program called the Health and Science Professions Information and Mentorship program, since 1988. This project involves placing Boston high school students with mentors in the Medical, Dental and Veterinary schools, offering the students workshops on college application, study skills, information about the health sciences, and offers program involvement to parents of the participants as well. In addition, the National Institutes of Health has provided funding to allow students to be paid for summer work in University laboratories.

The South Cove Neighborhood Health Center has recently taken advantage of the availability of meeting space on the Medford/Somerville campus by holding a training session there.

Tufts has agreed to serve as business partner to Chinatown's Boston Against Drugs project.

These policies, which are implemented through the Office of Community Relations, will allow Chinatown agencies and individuals to make use of various resources within Tufts University.

Student Service/Learning

The Christian Student Association has been providing health screening in local public schools.

The Medical School's curriculum, which relies on case studies, requires students to participate in 4 selectives during their first 2 years of study. These selectives often take students into the community, for example to the South Cove Community Health Center. This year a group of students is designing a suicide prevention program for teens. In a similar vein, the Medical School's methodology encourages investigation of cultural factors in the study of cases.

Medical School students organized a conversational Spanish program for their peers so that these future physicians would be better able to communicate with Spanish speaking patients.

Tufts Medical students are beginning a program of ESL tutoring for immigrant children through the auspices of the Maryknoll Sisters.

Tufts School of Dental Medicine participates in the community in a variety of ways. A program called the "Smile Squad" has been in existence for several years. Begun by Dental students, this group renews itself each year and presents dental information and dental health care advice to children in a variety of settings. The "Smile Squad" has won a national award for its original approach to dental care.

Dental students also have done geriatric screening in Boston and annually participate in the Museum of Science's Dental Health Week.

Clinic operations have seen an increase in recent years in participation by Asians from the Boston area. There are now Chinese dentists in the screening operation. The clinics have over 100,000 contacts per year and admit 20-30 new patients each day. Of the 61,000 patients currently being treated in the Dental Clinics, more than 20,000 live within the City of Boston. Four hundred and twenty-five are residents of Chinatown. While no breakdown is currently available that can identify how many patients are Asian, there are also numerous patients from other communities--such as Brighton and with significant Asian populations.

5.3 Direct Employment Benefits

Nearly six hundred new permanent jobs will be generated by the development of the Tufts Health Sciences program.

This includes the relocation of the School of Nutrition from the Medford campus to the Boston campus, which will bring 40 to 60 jobs into the City.

Daycare and an expanded YMCA will generate 10 to 20 new jobs.

Community administration and retail opportunities could generate up to 20 additional jobs.

The 10% space contingency over the life of the plan, would create another 70 jobs.

With the programmed expansion of research and teaching, a total of around 600 new permanent jobs will be in place when this plan is completed.

Also 1,600 to 2,400 construction jobs will be generated by the development. These jobs will, of course, be spread over the 20 years life of the plan.

(note: 719,000 gsf of construction at $225/sf is $161.8 million; and 100 jobs for $10-$15 million of construction.)

The following is a detailed analysis of the jobs generated, and their breakdown into phases:

EMPLOYEES GENERATED BY TUFTS TOTAL PROPOSED RESEARCH PROGRAM

new

Tufts Research Program

Faculty	83
Post Doctorate/Fellows	81
Technical Support for Research	151
Administrative Support for Research	18
Animal Housing Staff	10
	343

(Note: this figure of 343 is proportionally assigned to the research square footage in each of the phases in the ensuing breakdowns[10].)

Support Staff

Contracts and Administrative Support	15
Janitorial and Trades	30
Other Support	10

[10] In the actual research space program 40% of the proposed space is to bring current space up to modern laboratory standards (i.e. no staff increases) and 60% is laboratories for new research and programs(i.e. staff increases). In the phasing, it is assumed that there is an equal mix of 'upgrading' space and new space. This means, for example, that 40% of the research space shown in each phase does not include any staff increase.

All new

EMPLOYEES GENERATED BY PHASES

	Parcel	Floor Area (GSF)	Employees Generated
Phase I			
Research	Infill	37,000	26
School of Nutrition	Mid-Posner	48,000	60
Research	Mid-Posner	102,000[11]	72
Retail/Community Administration	Mid-Posner/Posner Hall	10,000	20
YMCA	Mid-Posner/Posner Hall	20,000	20
			198
Phase II			
Classrooms	North Posner/R-1	14,000	-
Research	North Posner/R-1	317,000[12]	220
Administrative Support	North Posner/R-1	33,000	15
Other Support	North Posner/R-1	-	5
Tufts Daycare	North Posner/R-1	5,000	5
Replacement Administration	North Posner/R-1	50,000	-[13]
Janitorial and Trades	All Parcels	-	30
			275

(Note: this total of 275 employees would be pro rated between North Posner and R-1 as: North Posner at 35% of built total - 96 employees; R-1 at 65% of built total - 179 employees.)

	Parcel	Floor Area (GSF)	Employees Generated
Phase III			
Research	M & V	72,000[14]	51
Contingency Area (10%)	M & V	71,000	70[15]
			121
Total for all Phases			594

[11] 21% of total 343.

[12] 64% of total 343.

[13] No increase in staffing above current administration.

[14] 15% of total 343.

[15] 10% of previous total of 498 jobs. i.e. 50; plus an additional 20 (40% of the 50) to account for the fact that all of this space would be new research rather than a mix of upgraded existing research and new research.

All new

5.4 Housing and Jobs Linkage

Under the linkage requirement of Boston zoning, Tufts estimates that it will pay approximately $3,672,000 (712,000 gsf minus 100,000 gsf = 612,000 x $5) into housing linkage and $612,000 into jobs linkage over the life of the Master Plan as the component projects are now envisioned in the plan. Because this Master Plan extends for twenty years into the future, and since the second and third phases of the plan are not projected to begin for seven to fifteen years, the actual payment schedule may resemble the following:

	Parcel	GSF of Development	GSF Applicable to Linkage	Housing Linkage Payment ($5 per applicable GSF)	Jobs Linkage Payment ($1 per applicable GSF)
Phase 1	Mid-Posner	143,000[16]	43,000	$215,000	$43,000
	Infill	37,000	37,000	185,000	37,000
Phase 2	R-1 Parcel	271,000	271,000	1,355,000	271,000
	North Posner	148,000	148,000	740,000	148,000
Phase 3	M&V Complex	113,000	113,000	565,000	113,000
		712,000	612,000	$3,060,000	$612,000

Obviously, the future building components when actually designed and permitted will govern the exact zoning gross subject to linkage. However, this schedule is a fair projection of the order of magnitude of linkage payments which this plan in the aggregate will ultimately generate.

[16] 150,000 gsf less 7,000 gsf for YMCA on Tufts land.

6.0 APPENDICES

6.1 Acknowledgements

The preparation of the Tufts University Health Sciences Institutional Master Plan has been a collaborative effort. The University wants to thank the following individuals and organizations who have contributed to the process.

Special thanks . . . . . .

- Chinatown - South Cove Neighborhood Council
- Other Groups

A number of city departments and agencies have also been important in developing the master plan.

- Boston Redevelopment Authority
- Other Groups

Tufts University staff who have assisted in the preparation of this report are:

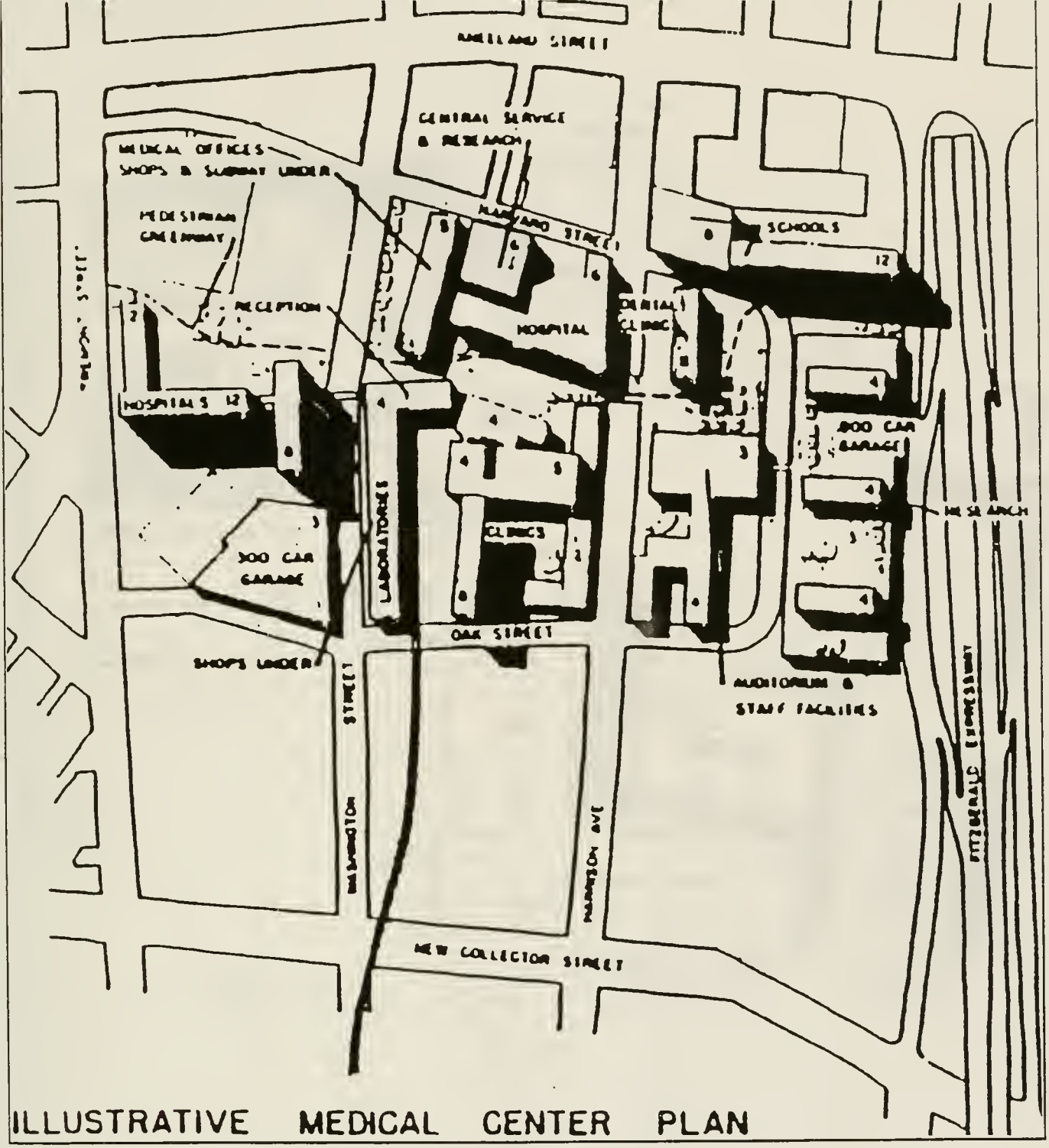
-

6.2 Inventory of Planning Efforts for South Cove/Chinatown Area

A number of planning efforts have been prepared for the study area over the last half century or so. Seven of these are documented here. A brief description of each of these efforts can be found in Section 3.5 of this report.

The following plans were reviewed in the preparation of this report:

The Lynch Plan for NEMC: 1955
TNEMC Plan of the 1960's
Urban Renewal Plan of the 1960's
NEMC Master Plan: 1990
University Hospital Plan: 1989
Midtown Cultural Plan: 1989
Chinatown Community Plan: 1990



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

LYNCH PLAN: 1955

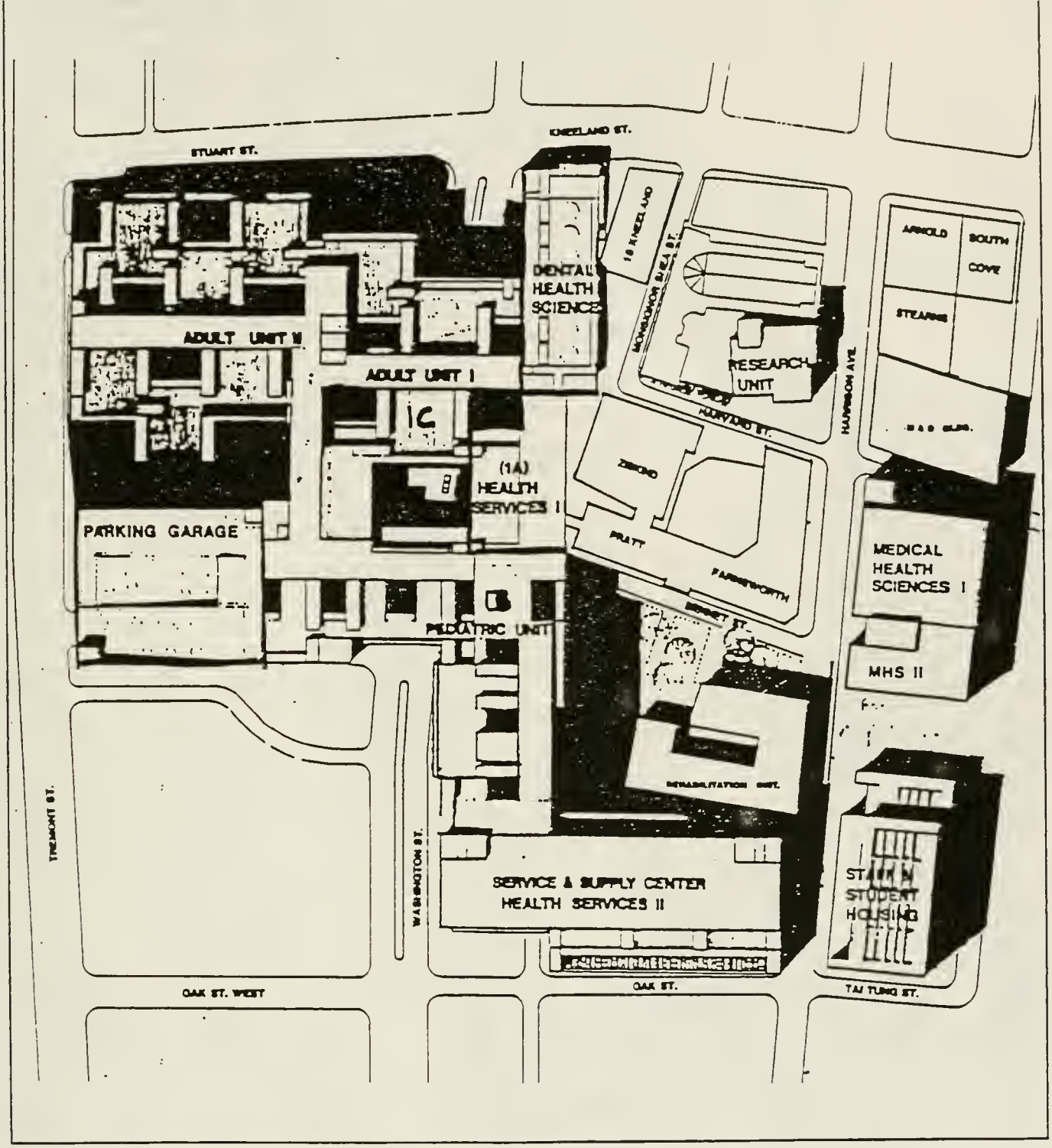
Figure 12.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

TNEMC PLAN: 1960s

Figure 13.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.

TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

URBAN RENEWAL PLAN: 1970s

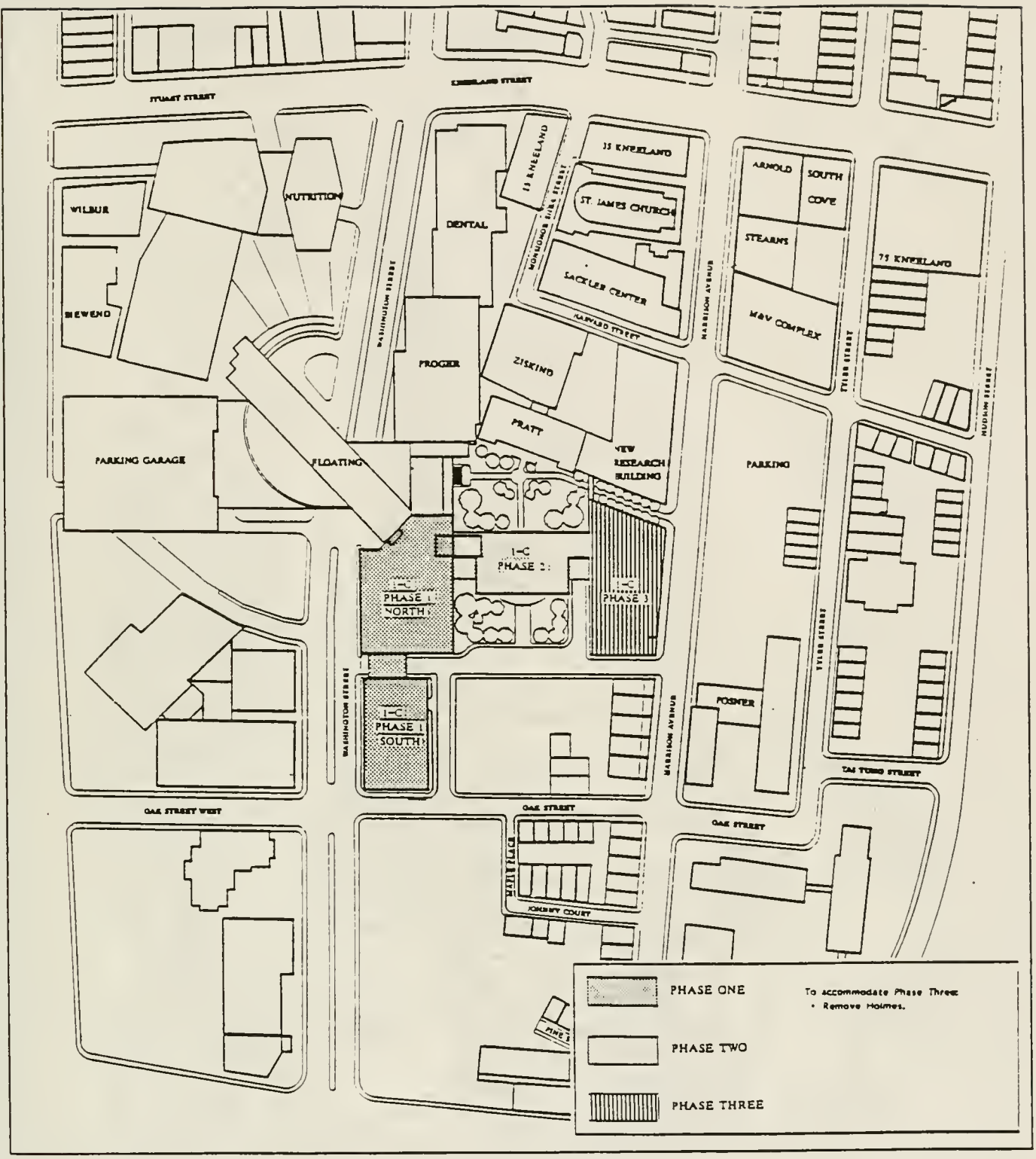
Figure 14.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston. Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

NEMC PLAN: 1990

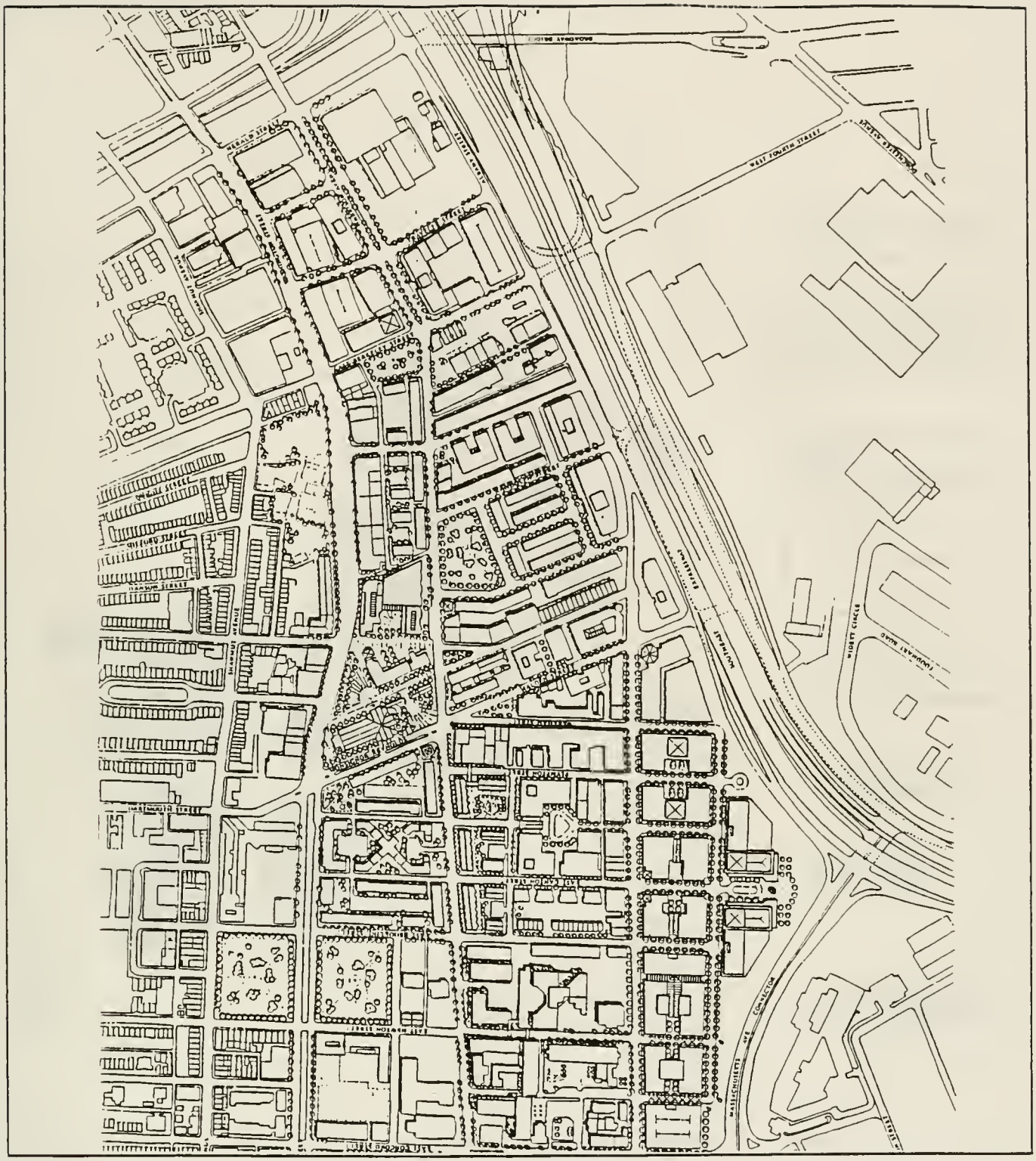
Figure 15.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

UNIVERSITY HOSPITAL PLAN: 1989

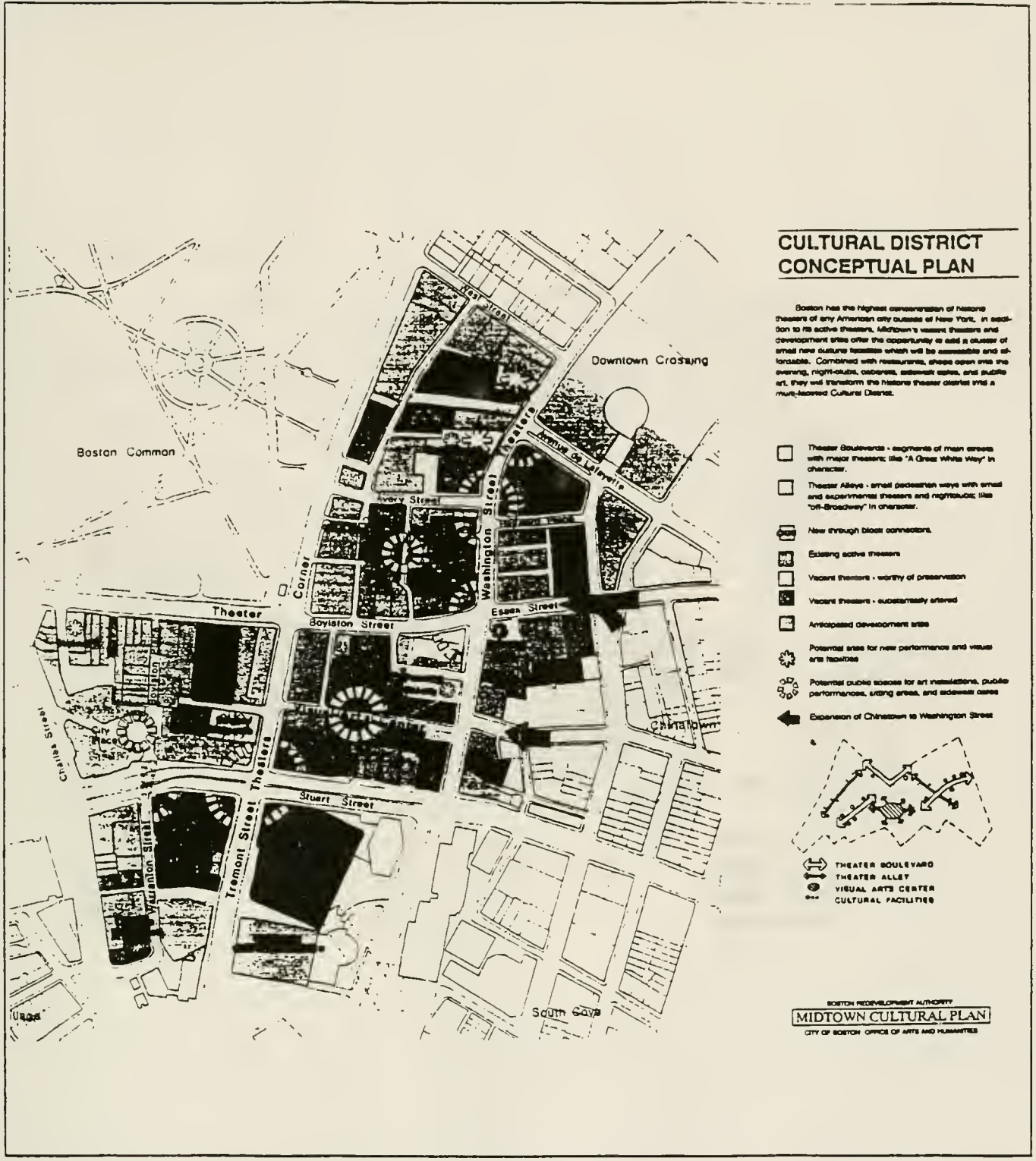
Figure 16.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

MIDTOWN CULTURAL PLAN: 1989

Figure 17.

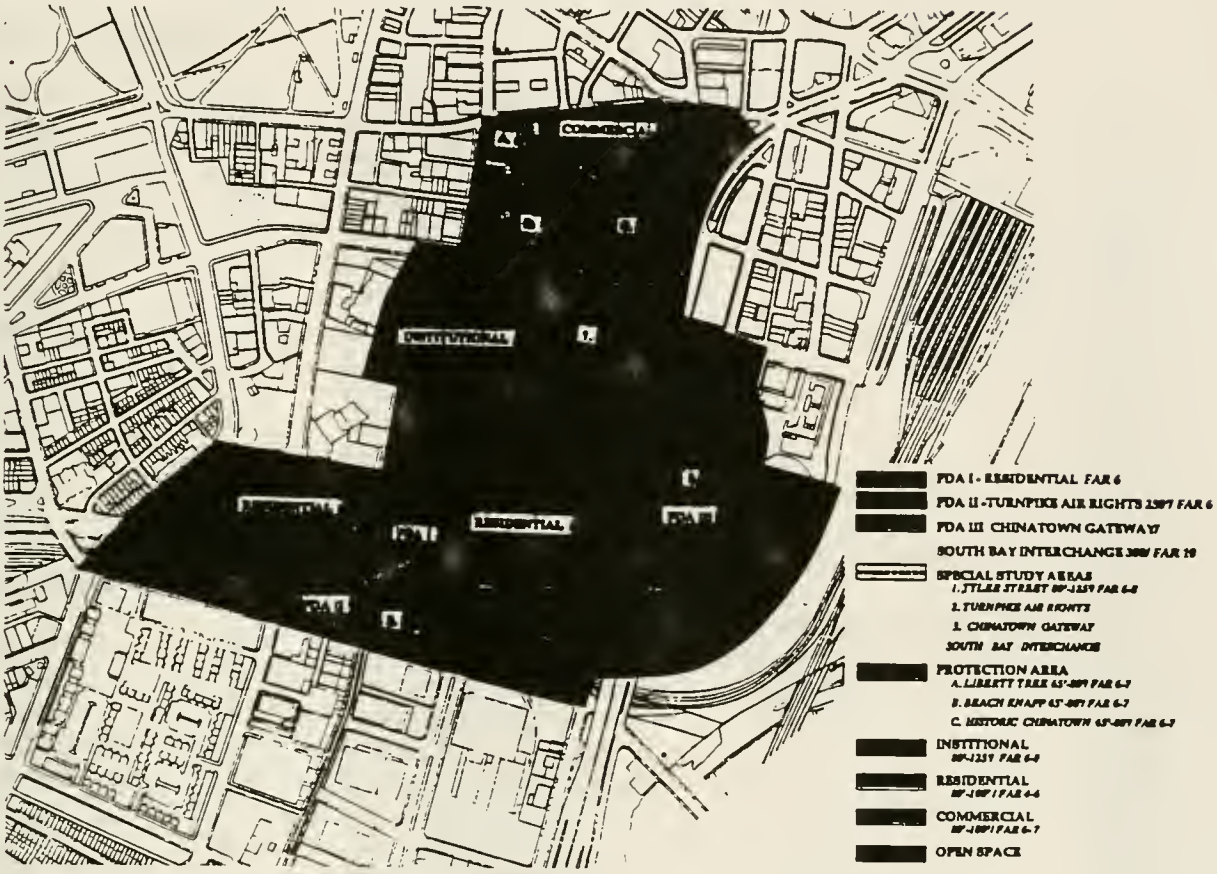
Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.

CHINATOWN ZONING



TUFTS UNIVERSITY HEALTH SCIENCES MASTER PLAN

CHINATOWN COMMUNITY PLAN: 1990

Figure 18.

Jung/Brannen Associates, Inc.
Architects and Planners

N

Boston, Massachusetts.

22 September 1991.

6.3 Existing Building Uses and Areas

Building	Floor	Use	Area (Gross Sq. Ft.)
Owned Buildings			
M & V	B	Gross Anatomy Labs/Receiving	14,000
Stearns	B	Physical Plant Shops/Mail	6,275
Arnold	B	Physical Plant Shops	6,404
South Cove	B	Storage	5,066
M & V	1	Lounge/Coffee Shop Vacant	2,800
		Vacant	11,200
Stearns	1	2# Lecture Halls	1,255
Arnold	1	Bookstore	3,202
		Research (wet)	3,202
South Cove	1	Research (wet)	5,066
M & V	2	Research (Pharmacology)	12,600
		Emeritus Professor Office Suite	1,400
Stearns	2	Research (Ob/Gyn, Nutrition, Infectious Diseases)	6,275
Arnold	2	Classrooms	3,842
		Research (Ob/Gyn, Nutrition, Infectious Diseases)	2,562
South Cove	2	Classrooms	2,533
		Research (Ob/Gyn, Nutrition, Infectious Diseases)	2,533
M & V	3	Research (Psychology/Pharmacology)	14,000
Stearns	3	Research (Nutrition, Infectious Diseases)	6,275
Arnold	3	Research (Bio-Pure)	6,404
South Cove	3	Research (Pathology)	5,066
M & V	4	Research (Microbiology)	14,000
Stearns	4	Lab. Animals	6,275
Arnold	4	Lab. Animals	6,404
South Cove	4	Research (Pathology)	5,066
M & V	5	Research (Anatomy)	14,000
Stearns	5	Research (Microbiology)	6,275
Arnold	5	Research (Microbiology)	6,404
South Cove	5	Research (Microbiology and Cancer)	5,066
M & V	6	Research (Biochemistry)	14,000
Stearns	6	Research (Anatomy)	6,275
Arnold	6	Research (Anatomy)	6,404
South Cove	6	Research (Anatomy)	5,066
M & V	7	Research (Physiology)	14,000
Stearns	7	Research (Biochemistry)	6,275
Arnold	7	Research (Biochemistry)	6,404
South Cove	7	Research (Biochemistry)	5,066
M & V	8	Research (Pathology)	14,000
Stearns	8	Research (Physiology)	6,275
Arnold	8	Research (Physiology)	6,404
South Cove	8	Research (Ophthalmology)	5,066
TOTAL FOR M & V COMPLEX			285,705

Building	Floor	Use	Area (Gross Sq. Ft.)
Dental	1	Lobby	3,122
		Dental Screening	1,040
		Loading Dock	10,405
		Maintenance Office	520
		Bank	5,203
Dental	2	Clinics	16,896
		Continuing Education	4,224
Dental	3	Clinics	21,120
Dental	4	Clinics	21,120
	5	Clinics[17]	10,560
Dental	6	Dental Research[18]	10,560
Dental	7	Dental Administration	8,448
		Student Lounge	4,224
		Auditorium	8,448
Dental	8	Clinics	4,224
		Faculty Practice	4,224
		Pre-clinic Classrooms	12,672
TOTAL FOR DENTAL			147,010
Sackler	B	Vet. School Student Lounge and Classroom	5,400
		De Blois Auditorium	2,025
		Educational Media	6,075
Sackler	1	Lobby	1,350
		De Blois Auditorium	8,100
		Educational Media	4,050
Sackler	2	Student Affairs Administrative Offices	5,400
		Classrooms	8,100
Sackler	3	Student Lounge	4,725
		Classrooms	7,750
		Medical Information Sciences	2,025
Sackler	4	Bridge Concourse	2,960
		Library	11,840
Sackler	5	Library	14,800
Sackler	6	Library	14,800
Sackler	7	Library	14,800
Sackler	8	Medical School Administrations (Dean's Office)	5,920
		Classrooms	1,480
		Dining Room and Kitchen	5,920
		Sackler School Administration	1,480
TOTAL FOR SACKLER			129,000

[17] Remainder of floor - 10,560 gsf - is used by NEMC.
[18] Remainder of floor - 10,560 gsf - is used by NEMC.

Building	Floor	Use	Area (Gross Sq. Ft.)
193 Harrison	1	TNEMC Health Services	3,033
193 Harrison	2	President/Provost Office/TUDC Inc.	2,395
193 Harrison	3	Unoccupied	1,270
193 Harrison	4	Unoccupied	1,264
203 Harrison	1	Veterinary School Administration	1,517
		Nutrition Program Clinic	1,517
203 Harrison	2	Veterinary School Administration	2,395
203 Harrison	3	Lab. Animal Administration	635
		'Data' Research	635
203 Harrison	4	NEMC Administration	758
		Tufts Diet and Nutrition Letter	506
TOTAL FOR 193/203 HARRISON			15,925
Posner	B	Weight/Pool Room	1,684
		Laundry Room	421
		3# Classrooms	2,105
		Orthopedic Research	842
		Storage	1,263
		Unoccupied	2,105
Posner	1	Bursar	3,665
		Human Resources	2,444
		Physical Plant	3,055
		Dormitories	3,055
		Posner Lecture Room	1,358
Posner	2	Accounting	4,161
		Dormitories	8,322
		Lounge	1,387
Posner	3	Materials Management	1,767
		Safety and Risk Management	1,767
		Dormitories	6,562
Posner	4	Research (Drug Development)	3,533
		Dormitories	6,562
TOTAL FOR POSNER			56,058

TOTAL IN OWNED BUILDINGS			633,698

Rented Buildings

75 Kneeland	15	Continuing Medical Education/International Affairs	8,000
		Research (Wet)	7,000
35 Kneeland	11	Community Health and Development Offices	9,415

TOTAL IN RENTED BUILDINGS	24,415
GRAND TOTAL IN OWNED AND RENTED BUILDINGS	658,113

6.4 Detailed Space Needs by Category

TUFTS PROGRAM

Research and Support Space

The figures in the table below show the current and proposed faculty of research departments. Column A then identifies the shortfall of space for the current research faculty levels.and column B the expansion space required for the proposed increase in faculty levels. The area needs were established by applying NIH space standards for Principal Investigator, post-doctorates and laboratory staff. The standards include laboratory service, faculty office space and office[19] support space.

The proposed staffing was established in consultation with each research department chair; which in turn, has been coordinated with the planning policies of the respective Schools. The criteria used to establish the proposed staffing include:

- What is the appropriate size for the department to carry out a full service research effort in its discipline?
- How does the size of the department compare with those in similar institutions?
- What particular research sub-disciplines are currently missing from the department?
- If space were available, how much could the funding level of the department be increased?

[19] Full-time worker: 175 nsf lab. space, 235 nsf support space. Net to gross ratio of 2.

No new departments are proposed. Rather, it is a matter of consolidating and building on the base of existing research initiatives, especially in the areas of the neurosciences.

	Existing Research Faculty	Existing Research and Support Space Net Sq.Ft.	A Shortfall of space for Existing Research Faculty Net Sq.Ft.	Proposed Increase in Research Faculty	B Expansion Space for Increase in Research Faculty Net Sq.Ft.	Total Space Required (A&B) Net Sq.Ft.
WET LABS.[20]						
Medical	113	122,969	86,821	74	124,363	211,184
Dental	8	3,832	1,578	7	17,315	18,893
Veterinary	3	4,154	186	0	820[21]	1,006
DRY LABS.[22]						
Medical	9	0	6,053	2	1,430	7,483
DATA LABS.[23]						
Medical	30	1,043	5,337	0	1,370[24]	6,707
ANIMALS						
Housing	(staff) 20	5,045	(345)	(staff) 13.5	3,155	2,810
TOTALS	183	137043	99630	96.5	148453	
248083						

Thus total additional gross square feet[25] for research and support space is 491,000.

[20] Biological Level 2 labs.
[21] Represents increase of 2 lab staff.
[22] Bench type labs (for bio-engineering type of research).
[23] Data processing labs e.g. computers, printers, records, etc.
[24] Represents increase of 3 post docs. and 6 lab staff.
[25] Gross square feet is net sq. ft. x 2 as per N.I.H. standard.

LABORATORY SUPPORT AND ANIMALS

All laboratory support is factored into the program tables. A modest central solvent storage facility and a central incineration facility are allowed for in the laboratory support. If major facilities are proved to be necessary, these would have to be programmed separately.

The present animal facility is new and has some 20% spare capacity for current research needs. An expansion is assumed in direct proportion to the increase in research space which should be more than adequate given the existing surplus.

Teaching

ENROLLMENT PROJECTIONS

Except for the Sackler School the planning assumption is that enrollments will remain at their current level. Thus no additions in teaching, student support and library space is anticipated sue to enrollment increases.

The Sackler School is anticipated to increase from its current enrollment of 147 graduate students to 200. This is necessary, in part, to support the proposed increase in research activity.and space for the 53 increase in graduate students is allowed for in the 'Research and Support Space' table.

CLASSROOMS

The curriculum of the Medical and Dental Schools is undergoing change: there will be a greater number of sections of smaller size thus entailing the provision of more 20 person size seminar rooms; and at the other end of the scale, some larger lecture style classes, requiring the provision of an additional lecture theater.

These needs translate into the following space requirements:

- Medical School	8# 20 person classrooms[26]	2,560 nsf
	1# 200 seat auditorium[27]	2,400 nsf
- Dental School	8# 20 person classrooms[28]	2,560 nsf
		7,520 nsf

Thus total additional gross square feet[29] for classroom space is 14,000.

Administration

The existing total area of the downtown health science buildings is 392,451 nsf. The proposed increase in research and classroom space is 255,603[30] nsf which represents a 65% increase in space. Currently, 28,553 nsf is assigned to operational and financial

[26] @ 16 nsf per seat.
[27] @ 12 nsf per seat.
[28] @ 16 nsf per seat.
[29] Gross square feet is net sq. ft. x 1.8 as per ratio in existing buildings
[30] Research: 248,083; classrooms: 7,520.

services support[31]. Assuming operational and financial services support would increase is direct proportion to the increase in space, then there would be a need for an additional 18,500 nsf of administrative space.

Thus total additional gross square feet[32] for administrative space is 33,000.

[31] Physical Plant, Mailroom, Public Safety, Accounting, Materials Management, Personnel and Stores; excluded are the academic administrative offices, i.e. the deans, president and admissions, since enrollment for the Medical, Dental and Veterinary Schools is not intended to increase.
[32] Gross square feet is net sq.ft. x 1.8 as per ratio in existing buildings.

School of Nutrition

Tufts University School of Nutrition is currently located on the Somerville/Medford campus in two wood-framed houses. These two houses accommodate only the basic administration for the School. Classrooms, research/teaching laboratories and animal housing are arranged elsewhere on an ad hoc basis. A new facility for the School is has been a long standing priority of the University and the possibility of locating the School at the Boston campus (possibly in some form of programmatic relationship with the USDA Nutrition Center),is one option under consideration.
A program for a new School of Nutrition facility has been developed[33] :

	nsf
Administration	1,435
Faculty	7,850
	9,285
Core Facilities	5,850
Laboratories	10,000
	15,850

Thus total additional gross square feet[34] for the School of Nutrition is 48,000.

Tufts Daycare

Current practice in day care operations is to begin or expand day care units in modules of 36 slots. This is determined by the minimum practical class size necessary to run a full service day care for infants to kindergarten. The minimum operation is proposed since day care would be a new service at the Boston campus and the actual demand will not be known until applications are received. If demand should prove to be high, space should be considered for doubling the size of the operation.

36 Slots @ 80 nsf/slot	2,880

Thus total gross square feet[35] for daycare is 5,000.

Retail

Retail space will be necessary along Harrison Avenue to enhance the pedestrian nature of the street. A provisional estimate of 6,000 gross square feet has been made to satisfy this criterion.

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[33] ARC: "New Facility Program, School of Nutrition" November 1988.
[34] Gross square feet for Administration/Faculty is net sq.ft. x 1.8 as per ratio in existing buildings (16,713 gsf) and for Core Facilities/Laboratories is net sq.ft. x 2 as per N.I.H. standard (31,700 gsf).
[35] Gross square feet is net sq.ft. x 1.5 as per standard for a new facility.

Replacement Area

The current Tufts' uses in Posner Hall must be replaced. Also, the intention is to eventually relocate current administration uses in 193 and 203 Harrison Avenue to more appropriate modern office space. The area that must be replaced is:

	gsf
Posner Hall	62,400
193 Harrison Avenue	5,600
203 Harrison Avenue	4,100
	72,000
Less Posner dormitory rooms	(22,000)
	50,000

COMMUNITY PROGRAM

YMCA

The following table shows how the proposed YMCA program is distributed between Posner Hall and the mid-Posner parcel of Tufts owned land:

	Posner Hall (gsf)	Under Plaza (gsf)	Mid-Posner Parcel (gsf)	TOTAL (gsf)
Gymnasium			6,230	6,230
Lockers/Storage	2,740	2,830	770	6,340
Administration	2,740			2,740
3 Exercise Rooms	4,720			4,720
Entrance	350			350
TOTAL	10,550	2,830	7,000	20,380

Community Day Care in Renovated Posner Building

Community Day Care in west wing basement	2,836 gsf

Community Offices in Renovated Posner Building

West wing first floor	2,160 gsf
East wing first floor	4,820
	6,890

SROs

SRO offices - west wing first floor	720 gsf
123 SROs - west and east wings, second to fourth floors	32,670
	33,390

Community Meeting Rooms Shared with Tufts

Auditorium + first floor corridor connector	2,950 gsf
Meeting Room + second floor corridor connector	2,950
	5,900

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